



# ROUTE 7 CORRIDOR STUDY

*from Route 28 to the Loudoun/Fairfax County Line*

## CORRIDOR STUDY REPORT

**DRAFT**

September 3, 2021

Loudoun County

  
VIRGINIA

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August 2021

# **Route 7 Corridor Study Report**

**Route 7  
from Route 28 to the Fairfax County Line  
Loudoun County, Virginia**

**DRAFT**

**September 3, 2021**

**Prepared for:  
Loudoun County Department of Transportation and Capital  
Infrastructure**



**Prepared by:  
Rummel, Klepper & Kahl, LLP**





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Route 7 Corridor Study  
Route 28 to the Fairfax County Line  
Loudoun County, Virginia

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A. Route 7 Concept Study Traffic Operations and Safety Report, RK&K, February 10, 2021



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## Executive Summary

The Route 7 Corridor Study Report evaluated potential improvements along a 4-mile segment of Route 7 between Route 28 in Loudoun County and Dranesville Road (Route 228) at the Fairfax County Line. The corridor serves commuter traffic from Loudoun County to points east, as well as local and regional trips for shopping, recreation and school-related trips. The existing congestion along the corridor has led to a history of crashes, which are predominately rear end crashes near traffic signals. The suggested improvements include an array of innovative intersection treatments such as grade separation of roadways crossing Route 7, Green-T and Center Left Turn Overpass intersections, and grade separation of thru traffic along Route 7 at selected locations. The recommendations break the improvements into short-term and long-term options for phased implementation. The proposed improvements relieve traffic congestion, maintain access to local businesses and minimize the need for right-of-way acquisition.

The subject section of Route 7 is classified as a principal arterial (freeway) and as a principal arterial (other) by Loudoun County's Comprehensive Transportation Plan and as Other Principal Arterial, Geometric Design Standards for Urban Principal Arterial System (GS-5), by VDOT. Route 7 generally travels in an east-west direction, and within the study area the western section of the project is suburban while the eastern section consists of more densely concentrated businesses and housing subdivisions. The 2019 Average Daily Traffic along the corridor was about 60,000 vehicles per day and is expected to increase to about 72,000 vehicles per day by 2040.

The study focused on vehicular improvements to optimize traffic flow and enhance safety. The goals for the project were to develop a proposed plan for improvements based on the identification of safety and operational trouble spots using pre-COVID-19 existing traffic data obtained in 2019, and forecasted future year traffic conditions for 2040, using the County's travel demand model (TDM).

The recommended improvements are anticipated to improve operations while preserving the existing roadway capacity, enhance safety by removing some traffic signals, and improve peak period throughput by reducing the volume at intersections with the addition of several flyovers to accommodate peak period movements more efficiently. If no improvements are made, future year traffic will operate at a degraded Level of Service (LOS) along sections of Route 7 with many of the movements along the corridor operating at LOS F. With the proposed improvements, the LOS along Route 7 is anticipated to operate acceptably (LOS A – D) for the majority of the movements, which is consistent with VDOT Northern Virginia District policy. The estimated construction costs for the project are \$423,980,000. In order to progress the project to implementation, funding must be secured, the design must be finalized, environmental studies and permitting needs need to be evaluated, and additional public involvement performed.



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## I. Introduction

The intent of the Route 7 Corridor Study Report is to study potential transportation improvements along Route 7 between Route 28 in Loudoun County and Dranesville Road at the Fairfax County line. In 2017, the Board of Supervisors, at the Transportation Summit, authorized the Department of Transportation and Capital Infrastructure (DTCI) to proceed with a study of Route 7, east of Route 28. The study would consider the conversion of Route 7 to a limited access or "near" limited access facility in the future. In 2019, the Countywide Transportation Plan was updated, and it now indicates, that along this segment of Route 7, the ultimate roadway condition in 2040 would be determined through this corridor study. Existing traffic data, crash history, future year traffic forecasts, as well as DTCI staff input determined that the improvements should include a combination of grade-separation for through traffic along Route 7 and innovative intersection improvements such as "Center Left Turn Overpass", and "Green-T" signalized at-grade intersections. The recommended potential improvements address projected future traffic congestion and crash history. The study area is shown below in Figure 1.

Route 7 is classified as a Principal Arterial (Freeway) from Route 28 to Algonkian Parkway/Atlantic Boulevard and a Principal Arterial (other) from Algonkian Parkway/Atlantic Boulevard to the Fairfax County Line by Loudoun County's Comprehensive Transportation Plan and as Other Principal Arterial, Geometric Design Standards for Urban Principal Arterial System (GS-5), by VDOT. Route 7 generally travels in an east-west direction, and the study area falls within the suburban policy area. The western end of the corridor is limited access, and the eastern end of the corridor is controlled access. The 2019 Average Daily Traffic along the corridor was about 60,000 vehicles per day and is expected to increase to about 72,000 vehicles per day by 2040.

The goals for the study were to create alternatives to develop a proposed plan based on the long-term vision for the corridor while addressing interim solutions for improvements based on the identification of safety and operational trouble spots, based on existing and forecasted future year traffic conditions.

This report summarizes the completed evaluation of existing conditions, future no-build and build traffic conditions, potential roadway improvements, and provisions for stormwater improvements. The study did not contemplate any substantial changes to land use along the corridor.



Figure 1: Study Area Map



## II. Existing Conditions

### A. Roadway

Route 7 is a divided highway with a grass median, asphalt roadway, paved inside shoulders, and curb and gutter along the outside. Pedestrian facilities are not contiguous along the corridor. Most intersections have dedicated turn lanes. The typical section at an intersection is shown below in Figure 2.

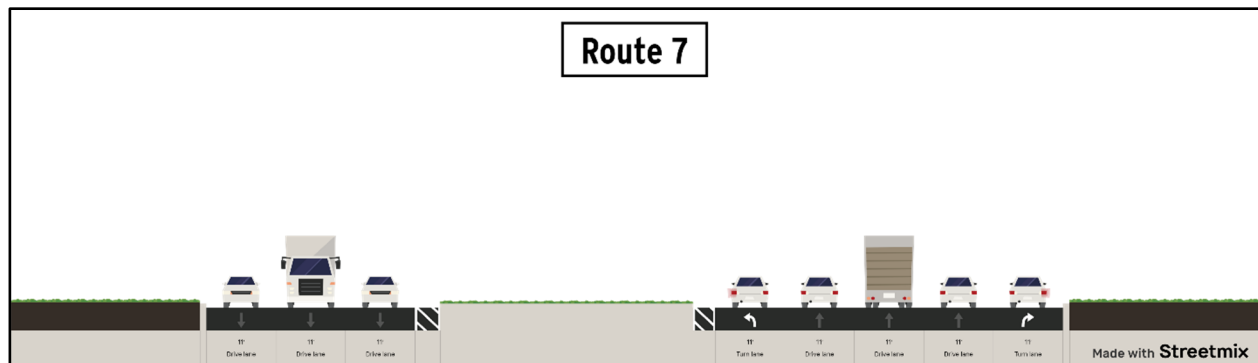


Figure 2: Existing Typical Section with Turn Lanes

### B. Study Area

The study area for this project is along Route 7 from Route 28 to Dranesville Road at the Fairfax County Line, it is approximately 4 miles in length. Except at the eastern limit, the project lies entirely in unincorporated areas of Loudoun County. There is a combination of grade separated interchanges and at-grade access points within the project area. The study area is included in the Algonkian, Sterling and Broad Run Districts.

### C. Geometry

Route 7 is a six-lane road between Route 28 and Dranesville Road. The road is three lanes in each direction. Dedicated turn lanes for both left and right movements are present at intersections. Turn lane configurations vary between one and three turn lanes per movement.

### D. Interchanges and Intersections

The study area of Route 7 includes three (3) grade separated interchanges, shown in Table 1 and 34 at-grade access points, eight (8) of which are signalized intersections, as noted in Table 2 and presented in Figure 3.

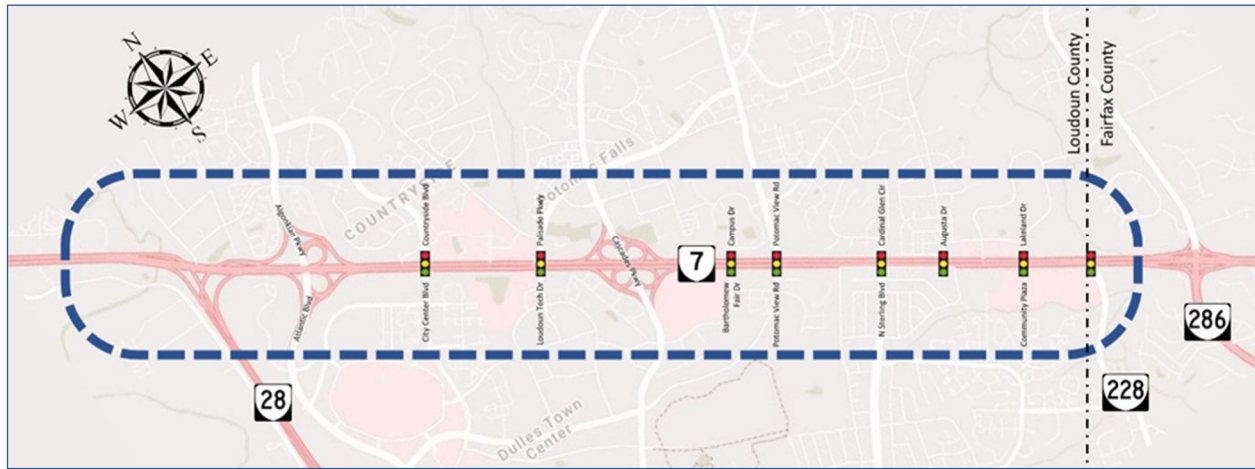
Table 1: Interchanges

Interchange Crossroad	Type	Access
Route 28	Directional	Full
Algonkian Pkwy/Atlantic Blvd	Partial Cloverleaf	Full
Cascades Pkwy	Full Cloverleaf	Full



**Table 2: At-Grade Access Points**

Connecting Roadway	Traffic Signal	Westbound		Eastbound	
		Access From WB Route 7	Access To WB Route 7	Access From EB Route 7	Access To EB Route 7
<b>Broad Run Drive</b>	No	Right-in	Right-out	None	None
<b>Jona Drive</b>	No	Right-in	None	None	None
<b>City Center Boulevard/ Countryside Boulevard</b>	Yes	Signalized			
<b>Davenport Drive</b>	No	Right-in	Right-out	None	None
<b>Loudoun Tech Drive/ Palisade Parkway</b>	Yes	Signalized			
<b>Bartholomew Fair Drive/ Campus Drive</b>	Yes	Signalized			
<b>Potomac View Road</b>	Yes	Signalized			
<b>Shoppes at Potomac Corner Access</b>	No	None	None	Right-in	Right-out
<b>Signal Hill Plaza Access</b>	No	Right-in	Right-out	None	None
<b>Cascades Village Access</b>	No	None	None	Right-in	Right-out
<b>N Sterling Boulevard/ Cardinal Glen Circle</b>	Yes	Signalized			
<b>Augusta Drive</b>	Yes	Signalized			
<b>Christ the Redeemer Roman Catholic Church Access</b>	No	None	None	Right-in	Right-out
<b>Red Wings Shoes Access/ Cedar Dr</b>	No	Full unsignalized access			
<b>Koons Sterling Ford Access</b>	No	None	None	Right-in	Right-out
<b>Cedar Lake Plaza Access</b>	No	Right-in	Right-out	None	None
<b>Community Plaza Access</b>	No	None	None	Right-in	None
<b>Community Plaza/ Lakeland Drive</b>	Yes	Signalized			
<b>Shell Gas Station Access</b>	No	Right-in	Right-out	None	None
<b>Shell Gas Station Access</b>	No	Right-in	Right-out	None	None
<b>Sugarland Crossing Access</b>	No	None	None	Right-in	None
<b>Ted Britt Chevrolet Access</b>	No	Right-in	None	None	None
<b>Ted Britt Chevrolet Access</b>	No	Right-in	Right-out	None	None
<b>Ted Britt Chevrolet Access</b>	No	Right-in	Right-out	None	None
<b>Sugarland Crossing Access</b>	No	None	None	Right-in	Right-out
<b>Mattress Warehouse Access</b>	No	Right-in	Right-out	None	None
<b>Sterling Center Access</b>	No	Right-in	Right-out	None	None
<b>Public Storage Access</b>	No	Right-in	Right-out	None	None
<b>Mobil Gas Station Access</b>	No	Right-in	Right-out	None	None
<b>Town Center at Sterling Access</b>	No	None	None	Right-in	Right-out
<b>Mobil Gas Station Access</b>	No	Right-in	Right-out	None	None
<b>NAPA Auto Parts Access</b>	No	Right-in	Right-out	None	None
<b>Auto Service Access</b>	No	Right-in	Right-out	None	None
<b>Dranesville Road/ Popeyes Access</b>	Yes	Signalized			



**Figure 3: Signalized Intersections**

## E. Traffic

An overview of traffic methodologies and assumptions used for model development are explained in this section.

### 1. Traffic Volumes

Traffic counts and travel time measurements for this study were performed in June 2019 and February 2020, while Loudoun County schools were in session. The traffic counts were performed on mainline Route 7 as well as the on- and off-ramps at the interchanges along the study corridor. All traffic information was collected prior to closings of institutions and businesses related to COVID-19. Therefore, no modifications to traffic data were made related to COVID-19.

### 2. VISSIM for Existing Conditions

Traffic analyses were performed using calibrated *VISSIM* simulations to evaluate the current intersection and roadway performance along Route 7 under existing conditions. *VISSIM* model calibration was performed in compliance with *VDOT Traffic Operations and Safety Analysis Manual (TOSAM)* guidelines. The purposes of the existing conditions analyses are to calibrate the simulation model based on field-measured data and to establish a baseline to which the future year No-Build conditions can be compared. Furthermore, since the safety evaluation of crash history along the corridor is based on past and existing conditions, the existing conditions operational analyses makes it possible to identify potential correlations between traffic operations and the types and frequency of crashes. Existing traffic performance was measured in terms of delay (seconds per vehicle) and level of service (LOS) at intersections by individual turning movement, directional approach, and whole intersection. The performance of interchange ramp merges, diverges, and weaves was measured in terms of LOS based on density (vehicles per mile per lane, or vpmpl).



### 3. Existing Travel Times

The travel times along Route 7 from the *VISSIM* traffic simulations of the existing conditions were as follows:

- AM Peak Hour, Eastbound: 9.6 minutes
- AM Peak Hour, Westbound: 6.7 minutes
- PM Peak Hour, Eastbound: 7.8 minutes
- PM Peak Hour, Westbound: 9.0 minutes

Compared to the field-measured travel times, these simulated travel times fell within the acceptable limits according to the VDOT *TOSAM*. They corroborate the fact (based on the traffic counts) that the peak direction of travel is eastbound along Route 7 during the AM peak period and westbound along Route 7 during the PM peak period. The travel time runs that were used for model calibration were performed on 2/26/2020, 2/27/2020, and 3/5/2020. COVID-19-related closures (and the travel pattern changes associated with them) in the DC region did not begin until 3/13/2020. Therefore, this field data should not have been affected by COVID-19.

### 4. Existing Level of Service and Queues

Analysis results were generated using *VISSIM* and measured for each overall signalized intersection, each directional approach at signalized and unsignalized intersections and driveways, and each individual turning movement.

- All signalized intersections along the Route 7 corridor have at least one directional approach that operates at LOS E or F during the AM and/or PM peak hours.
- All unsignalized intersections and all driveways operate at LOS D or better during both the AM and PM peak hours.

Route 7 through the Cascades Pkwy interchange is divided into multiple segments in the *VISSIM* simulation based on the various ramp merge and diverge points.

- 3 of the 5 roadway segments along eastbound Route 7 through the Cascades Pkwy interchange operate at LOS C or better during the AM peak hour, and all 5 segments are LOS C or better during the PM peak hour.
- All 5 roadway segments along westbound Route 7 through the Cascades Pkwy interchange operate at LOS C or better during the AM peak hour, and 4 of 5 segments are LOS C or better during the PM peak hour.

Maximum queue lengths were generated using *VISSIM* and measured in feet for each turning movement lane group (i.e., left turn, through, and right turn) at each signalized intersection, unsignalized intersection, and driveway.

- There are 4 overflowing left or right turn storage lane maximum queues that exceed the available storage lengths during the AM peak hour, and 8 during the PM peak hour.
- During the AM peak hour, 1 of the 4 overflowing turn lanes is along Route 7 (at Potomac View Rd), and during the PM peak hour, 3 of the 8 overflowing turn lanes are along Route 7 (at Potomac View Rd, N Sterling Blvd, and Dranesville Rd); the remaining overflowing turn lanes are on the cross-street approaches.



## 5. Crash Analysis

As part of this study, a crash analysis was performed along the corridor, using a seven-year crash dataset for the period (2013-2019) obtained from VDOT's *Traffic Engineering Tableau Crash Analysis Tool*, available online. The crash analysis was performed to review patterns across the study area including on type of injury, collision type, travel direction, surface condition, and lighting conditions.

Analysis of the crash data resulted in the following insights:

- Approximately 59% of the total crashes were rear end crashes, 20% were angle crashes, and 9% were sideswipe crashes.
  - 76% of the rear end collisions occurred along eastbound and westbound Route 7 approaching signalized intersections.
  - 42% of the length of Route 7 within the study corridor is located within signalized intersections, according to the VDOT Linear Referencing System.
  - Therefore, a disproportionate number of rear-end crashes occurred at signalized intersections, and there is a correlation between overall crash frequency and the prevalence of traffic signals along the corridor.
- Poor roadway conditions due to weather do not seem to be directly associated with the overall crash frequency; 82% of the total crashes were on dry roadway conditions, while only 16% of the crashes occurred on wet roadway conditions.
- The majority of the crashes (64%) occurred under daylight conditions.
- Crash frequency was balanced between the eastbound and westbound directions, each of which adds up to 50% of the total crashes.

## F. Utilities

A preliminary review was conducted for utilities within the project work area utilizing Loudoun County online GIS mapping data, Google Maps, and a Miss Utility mock ticket. Existing utilities along the study corridor are both underground and aerial. RK&K attempted to reach the utility owners to confirm details of their facilities with limited success. There has been no investigation of prior utility rights. The utilities who may have facilities in the study area at the time of the report are as follows:

- AT&T – Underground facilities adjacent to Route 7 both EB and WB between City Center Blvd/Countryside Blvd and Loudoun Tech Drive/Palisade Pkwy as well as along WB Route 7 for 250' about 300' east of Potomac View Rd. Aerial facilities adjacent to Route 7 WB between Dranesville Road and Cascades Pkwy.
- Comcast – No information provided by utility
- Cox – No information provided by utility
- Dark fiber – No information provided by utility
- Dominion Energy – Primary overhead power along WB Route 7 for the entire project limits with overhead or underground power extending to adjacent properties and along connecting roadways.
- Fairfax Water and sewer – Businesses adjacent to Route 7 within several hundred feet of the County line have private pressure lines that connect to the Fairfax County sewer



system. There is a 36" sewer main that crosses Route 7 east of Dranesville Road and west of Sugarland Run.

- Fiberlight – No information provided by utility
- (Level 3) CenturyLink – No information provided by utility
- Loudoun County Water & Sewer – There is an extensive network of water and sewer facilities including a 20" water main that runs just north of Route 7 between Route 28 and Sterling Blvd/Cardinal Glen Circle.
- Lumen – Underground facilities along Route 7 for the length of the project.
- Lumos Network – Lumos (recently acquired by Segra) has fiber running on the east side of Algonkian Pkwy/Atlantic Blvd and fiber on the south side of Route 7 between Cascades Pkwy and Sterling Blvd.
- NCI – No information provided by utility
- TEG bandwidth – No information provided by utility
- QWEST – No information provided by utility
- SummitIG – SummitIG provides fiber conduit related to Route 28 and Route 7 VDOT cameras. This conduit is in the vicinity of the Route 28/Route 7 interchange.
- Verizon – Extensive transmission and service network including underground conduit on the south side of Route 7 from Route 28 to City Center Blvd, aerial conduit on the south side of Route 7 from City Center Blvd to Bartholomew Fair Drive and from 400' east of Potomac View Rd to 700' west of Dranesville Rd, and underground conduit on the north side of Route 7 from Campus Drive to 500' west of Augusta drive where it crosses to the south side of Route 7 and continues to east of Dranesville Road.
- Washington Gas – There is a 24" gas transmission main which runs alongside Route 7 for the majority of the project, crossing the highway twice. Four regulator stations are located adjacent to westbound Route 7 within the limits of the project, and a number of smaller distribution gas mains are located in the project area.
- Zayo – Fiber along Route 7 between Countryside Blvd and Cedar Drive as well as extensions north on Countryside Blvd, south on Cascades Blvd, and south on Sterling Blvd.

## **G. Stormwater Management**

The predominate land use along both sides of Route 7 are commercial developments with the majority of the watershed being impervious area. Most of the impervious area within the watershed limits is paved roadways, parking lots, and buildings. There are three drainage divides within the study area as shown in Figure 4. The hydrologic units associated with these areas are:

- Broad Run-Beaverdam Run – HUC12 020700080903; VAHU6 PL19
- Potomac River-Selden Island – HUC12 020700080904; VAHU6 PL20
- Sugarland Run – HUC12 020700080905; VAHU6 PL21

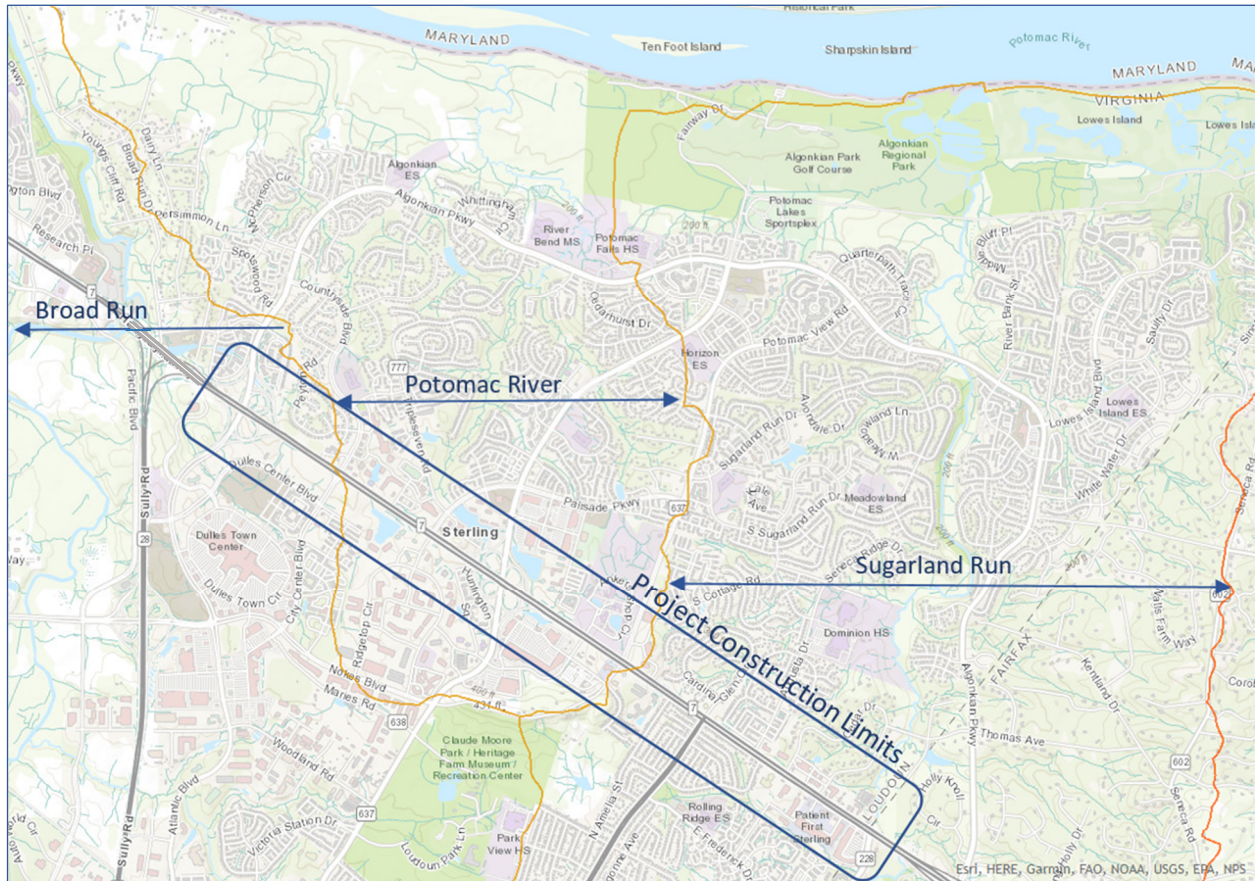


Figure 4: Stormwater Drainage Divides Map

## H. Land Use

Existing land use in the Study Area is predominantly commercial right-of-way, followed by single-family detached residential and multi-use areas. If the proposed widening extends beyond the current right-of-way, the conversion of land from its present use to right-of-way would be a direct impact of construction of the project. The project's impacts on land use, right-of-way, and relocations would be determined when the project proceeds to detailed design and permitting.

## I. Related Projects

Ongoing independent projects within the Study Area are summarized below and shown in Figure 5.



**Figure 5: Related Projects**

Route 7 Pedestrian Improvements are currently in the design phase. New crosswalks will be added at three (3) intersections: Bartholomew Fair Drive/Campus Drive, Potomac View Road, and Lakeland Drive.

#### Bartholomew Fair Drive (Route 1792)/Campus Drive

- A crosswalk will be marked across the eastern leg of the intersection.
- ADA compliant ramps will be constructed on the northeast corner, eastern median, and southeast corner.
- The eastern median will be modified to accommodate the proposed ramps and sidewalk to connect the pedestrian ramps.
- Minor grading is expected in the median; however, no changes to the drainage structures are anticipated.
- A new channelized island will replace the existing channelized island in the southeast corner. This will accommodate a pedestrian refuge and ramps. The northbound



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channelized right lane will be adjusted to accommodate the proposed channelized island. No new sidewalk will be provided outside the median.

#### Potomac View Road

- A crosswalk will be marked across the western leg of the intersection.
- ADA compliant ramps will be constructed on the northwest corner, western median, and southwest corner.
- The existing channelized island in the northwest corner will be modified to accommodate pedestrian ramps. The western median will be modified to accommodate the proposed ramps and sidewalk to connect the pedestrian ramps.
- The existing drainage pipe in the median is expected to be extended and minor grading is expected in this area. No other changes to the existing drainage structures are anticipated.
- A new channelized island will replace the existing channelized island in the southwest corner. This will accommodate a pedestrian refuge and ramps. The eastbound channelized right lane will be adjusted to accommodate the proposed channelized island. No new sidewalk will be provided outside the median.

#### Lakeland Drive (Route 821)

- A crosswalk will be marked across the eastern leg of the intersection.
- ADA compliant ramps will be constructed on the northeast corner, eastern median, and southeast corner.
- The eastern median will be modified to accommodate the proposed ramps and sidewalk to connect the pedestrian ramps.
- No modifications to the existing drainage structures are anticipated.
- No new sidewalk will be provided outside the medians.

#### Route 7 Westbound over Sugarland Run Bridge Rehabilitation

- VDOT project completed in April 2021
- New concrete bridge deck, bridge pier and abutment repairs
- Guardrail and curb and gutter improvements on approaches to bridge

#### Route 7 Corridor Improvements, Reston Avenue to Jarrett Valley Drive (east of project limits)

- The 7-mile long project is widening Route 7 from four to six lanes, adding 10-foot shared-use paths, and making substantial intersection and other improvements along the corridor. The project is currently in construction with an estimated completion of July 2024.

#### Route 7 and Battlefield Parkway Interchange (west of project limits)

- This project replaces a signalized intersection with a grade-separated interchange, eliminates the Cardinal Park intersection with Route 7 and adds auxiliary lanes on eastbound Route 7 from the Leesburg Bypass to the new Battlefield Parkway interchange, and from the Battlefield Parkway interchange to River Creek Parkway.
- Estimated completion Fall 2021



### III. Future Year Conditions

#### A. Traffic Forecasts

DTCI established 2040 to be the design year for the Route 7 Corridor Study. A review of historical traffic counts performed along Route 7 by VDOT, and the roadway link volumes estimated by the Loudoun County Travel Demand Model was used to determine a reasonable long-term traffic growth rate. The traffic counts for this study, which included weekday peak period intersection turning movement volume counts and weekday 24-hour ramp volume counts, were all performed in June 2019 prior to closings of institutions and businesses related to COVID-19. Therefore, no modifications to traffic data were made related to COVID-19.

- Results of the review:
  - Long-term historical trend was negative
  - Short-term historical trend is positive but almost flat
  - Long-term trend from the travel demand model is slightly positive
- Recommendation for forecasts:
  - Use +1% annual growth to adjust existing traffic counts to 2040 levels for analysis

Traffic volume forecasts were prepared for both 2040 No-Build and 2040 Build conditions. The Build conditions include changes to the roadway configuration along Route 7 such as eliminating some at-grade intersections and providing grade-separation (i.e., overpasses) for through traffic on Route 7 at some locations. These changes would require re-routing of some traffic volumes compared to the No-Build conditions. The 2040 traffic forecasts for the Build conditions account for these changes.

#### B. VISSIM for 2040 Conditions

*VISSIM*, a micro-simulation traffic analysis software, was used to analyze the anticipated traffic operations along Route 7 in 2040 for the No-Build and Build conditions.

##### 1. No-Build Conditions

For these analyses, the traffic signal phasing and timing programs along Route 7 were maintained from the Existing Conditions analysis. No geometric roadway improvements were assumed to occur along Route 7 for this No-Build Conditions analysis.

Travel times along Route 7 were simulated using *VISSIM* and are as follows:

- AM Peak Hour, Eastbound: 15.6 minutes (peak travel direction based on volume)
- AM Peak Hour, Westbound: 7.2 minutes
- PM Peak Hour, Eastbound: 9.4 minutes
- PM Peak Hour, Westbound: 10.7 minutes (peak travel direction based on volume)

Analysis results were generated using *VISSIM* and measured for each overall signalized intersection, each directional approach at signalized and unsignalized intersections and driveways, and each individual turning movement.



- All eight (8) signalized intersections would continue to operate at a minimum LOS D, except for the intersection at Dranesville Road which would operate at LOS E during the PM peak hour.
- Like the Existing Conditions, every signalized intersection along this corridor has at least one directional approach that would operate at LOS E or F during the AM and/or PM peak hours.
- All the unsignalized intersections and driveways would operate at LOS D or better during the AM and PM peak hours.

Route 7 through the Cascades Pkwy interchange is divided into multiple segments in the *VISSIM* simulation based on the various ramp merge and diverge points.

- All five (5) roadway segments along eastbound Route 7 through the Cascades Pkwy interchange would operate at LOS E or F during the AM peak hour, but all 5 segments would operate at LOS C or better during the PM peak hour.
- All five (5) roadway segments along westbound Route 7 through the Cascades Pkwy interchange would operate at LOS C or better during the AM peak hour, but 3 of the 5 segments would operate at LOS D, E, or F during the PM peak hour.

Maximum queue lengths were generated using *VISSIM* and measured in feet for each turning movement lane group (i.e., left turn, through, and right turn) at each signalized intersection, unsignalized intersection, and driveway.

- Six (6) intersections would have maximum queues exceeding the available storage length along Route 7 (i.e., turn bay lengths or the distance to the adjacent upstream traffic signal) during the AM peak hour.
- Eight (8) intersections would have maximum queues exceeding the available storage length along Route 7 during the PM peak hour.
- Cedar Drive is the only unsignalized intersection (out of 3 along the corridor) that would have turn lanes along Route 7 with maximum queues that exceed the available storage length.

## 2. Build Conditions

The preferred Build alternative includes the following modifications to the No-Build conditions:

- Remove the at-grade signalized intersections at City Center Blvd/Countryside Blvd and at Palisade Pkwy/Loudoun Tech Dr and construct overpasses carrying Route 7 over these two cross-streets.
  - Provide parallel service roads north and south of Route 7 between Atlantic Blvd/Algonkian Pkwy and Cascades Pkwy to provide access to/from Route 7 at each of those interchanges for traffic diverted due to the removal of the two at-grade intersections above.
  - Several on- and off-ramps at the Atlantic Blvd/Algonkian Pkwy and Cascades Pkwy interchanges would be removed to accommodate the connections to the proposed parallel service roads.
- Reconfigure the at-grade signalized intersection at Campus Dr/Bartholomew Fair Dr with eastbound Route 7 traffic being free-flowing, and movements to/from Campus Drive restricted to right-in/left-in/right-out only at a traffic signal along westbound Route 7 (Bartholomew Fair Dr would become unsignalized right-in/right-out only).



- Construct a center-turn overpass at the Potomac View Rd intersection to separate the left-turn movements from the through and right-turn movements, and provide a yield-controlled “Texas U-turn” from westbound Route 7 to accommodate traffic diverted here from Cardinal Glen Cir (refer to the next bullet).
- Reconfigure the N Sterling Blvd/Cardinal Glen Cir intersection as a “Green-T” signal with westbound Route 7 traffic being free-flowing, an overpass carrying eastbound Route 7 through traffic over N Sterling Blvd, and movements to/from Cardinal Glen Cir restricted to right-in/right-out only, with nearby U-turns to provide locations for the four diverted movements that would become prohibited at this intersection (see previous bullet and next bullet).
- Reconfigure the Augusta Dr intersection as a “Green-T” signal with eastbound Route 7 traffic being free-flowing, and allow U-turns from eastbound Route 7 to accommodate traffic diverted here from N Sterling Blvd (see previous bullet).
- Close the median crossover at the Cedar Dr intersection, converting Cedar Dr to right-in/right-out only and diverting all left-turns to the Augusta Dr and Lakeland Dr intersections via Maple Leaf Place and Jennings Farm Dr which run parallel to Route 7.
- Construct an overpass carrying eastbound Route 7 through traffic over Lakeland Dr/Community Plaza and Dranesville Rd. (The at-grade eastbound lanes would carry local traffic and maintain access to both cross-streets.)
- Reconfigure the Dranesville Rd intersection as a “Green-T” signal with westbound Route 7 traffic being free-flowing.

Travel times along Route 7 were simulated using *VISSIM* and are as follows:

- AM Peak Hour, Eastbound: 5.4 minutes (peak travel direction based on volume)
- AM Peak Hour, Westbound: 6.1 minutes
- PM Peak Hour, Eastbound: 6.7 minutes
- PM Peak Hour, Westbound: 7.0 minutes (peak travel direction based on volume)

These results show that the removal of several at-grade signalized intersections along Route 7 would result in travel time savings of about 10 minutes in the peak travel direction during the AM peak hour and about 4 minutes in the peak travel direction during the PM peak hour when compared to the travel times under the No-Build Alternative.

Analysis results were generated using *VISSIM* and measured for each overall signalized intersection, each directional approach at signalized and unsignalized intersections and driveways, and each individual turning movement.

- The six (6) at-grade signalized intersections remaining along Route 7 under the Build alternative (which will have all been converted to “Green-T”, center turn overpass, or through traffic overpass configurations) would each operate at LOS C or better during both the AM and PM peak hours.
- Except for the southbound approach at Augusta Dr (LOS E, PM), and the northbound and southbound cross-street approaches at Lakeland Dr/Community Plaza (NB LOS F, PM and SB LOS D, PM), all approaches at the six (6) remaining at-grade signalized intersections would operate at LOS C or better during the AM and PM peak hours.



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Route 7 through the Cascades Pkwy interchange was divided into multiple segments in the *VISSIM* simulation based on the various ramp merge and diverge points reconfigured under the Build alternative. Each of the Route 7 roadway segments through this interchange would operate at LOS C or better in both directions during the AM and PM peak hours.

Maximum queue lengths were generated using *VISSIM* and measured in feet for each turning movement lane group (i.e., left turn, through, and right turn) at each signalized intersection, unsignalized intersection, and driveway. Three (3) of the remaining six (6) at-grade signalized intersections would have maximum queue lengths that exceed the available storage (i.e., turn lane length or distance to the adjacent upstream traffic signal) but only during the PM peak hour:

- Northbound left-turn movement from Dranesville Rd onto Route 7
- Westbound Route 7 through movement at Lakeland Dr/Community Plaza
- Southbound left-turn movement from Lakeland Dr onto Route 7

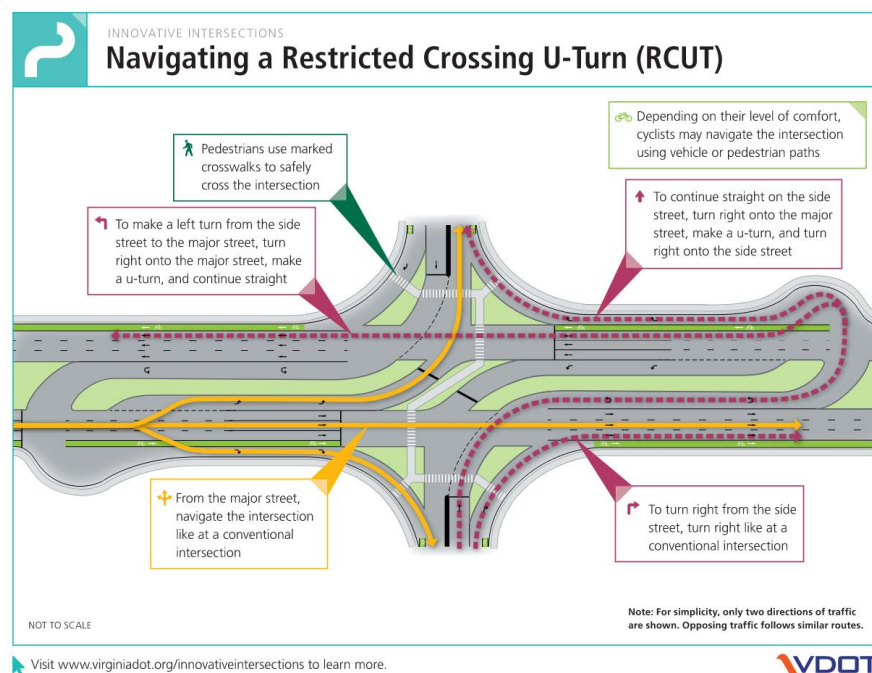
In summary, the *VISSIM* simulation results indicate that traffic operations under the proposed Build alternative in 2040 would be notably improved compared to anticipated 2040 No-Build conditions.

## IV. Alternative Improvements

The following alternatives were assessed in the development of the recommended improvements within the project corridor:

### Alternative 1: Superstreet

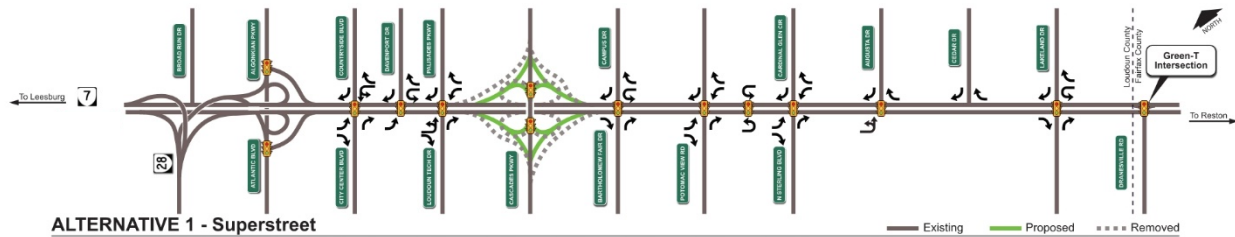
This alternative consists of several Restricted Center U-Turn (RCUT) intersections. As shown in Figure 6, RCUT intersections require all side street movements to start with a right turn; dedicated U-turn movements allow vehicles to complete the desired movement.



**Figure 6: Restricted Center U-Turn (RCUT) Intersection**

The primary purpose of the Alternative 1: Superstreet configuration is to reduce delay and improve peak direction travel times for through traffic along Route 7, while improving safety through the reduction of the number of conflict points at the signalized cross-street intersections. Alternative 1 added two (2) new traffic signals along Route 7 where it was feasible based on the spacing between the existing signalized intersections (at Davenport Dr and between Potomac View Rd and N Sterling Blvd), resulting in a total of 10 signalized intersections within the study corridor along Route 7. Due to the elimination of crossing and left-turning traffic from the cross-streets, most of the signalized intersections would be simplified to have fewer signal phases at each intersection. In addition to the signals along Route 7, the intersection along Algonkian Pkwy at the off-ramp from westbound Route 7 would be signalized to more easily accommodate diverted westbound traffic needing to make a “U-turn” to access eastbound Route 7 via this interchange. The interchange at Cascades Pkwy is also proposed to be reconfigured from the existing cloverleaf into a tight diamond interchange (TDI) or single-point urban interchange

(SPUI) to more easily accommodate diverted eastbound traffic needing to make a “U-turn” to access westbound Route 7.

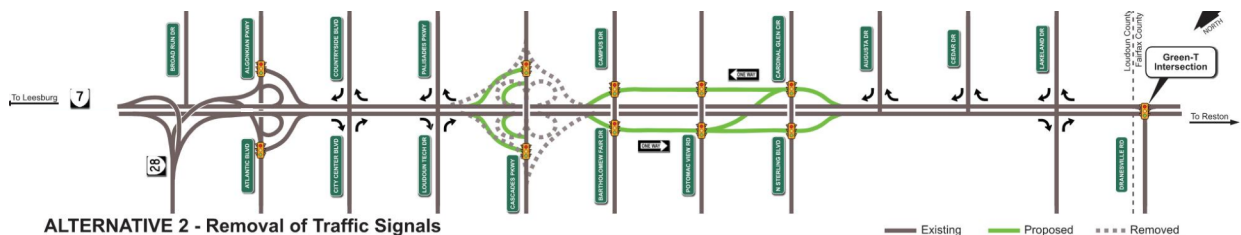


**Figure 7: Alternative 1 - Superstreet**

While this alternative was able to make significant operational improvements along the corridor with minimal right-of-way impacts, this solution would not solve all of the corridor’s operational issues or significantly improve traffic flow through the corridor.

## Alternative 2: Removal of Traffic Signals

This alternative removes traffic signals along the mainline Route 7 study corridor, except at Dranesville Road. The existing interchanges remain untouched as is at Route 28 and Atlantic Boulevard/Algonkian Parkway. The interchange at Cascades is converted to a half cloverleaf to the west. The expected benefit was that traffic would flow more smoothly with fewer signalized intersections and fewer turning movements.

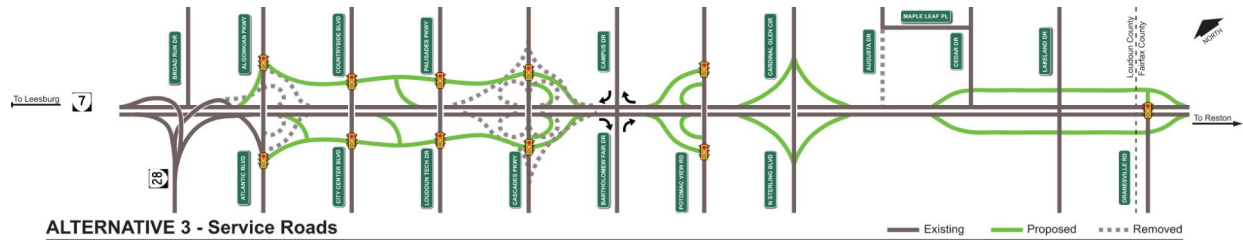


**Figure 8: Alternative 2 - Removal of Traffic Signals**

This option was not advanced beyond the initial screening due to the anticipated significant right-of-way impacts expected along the corridor.

## Alternative 3: Service Roads

This alternative uses backage roads (i.e., roads behind the properties fronting Route 7) to connect properties and roadways to Route 7; meaning that access to properties would be on roads other than Route 7. In addition, the existing interchanges would be modified and turning movements along the Route 7 corridor would be limited. The expected benefit of this option was that almost all turning movements and property accesses would be removed from the mainline Route 7.

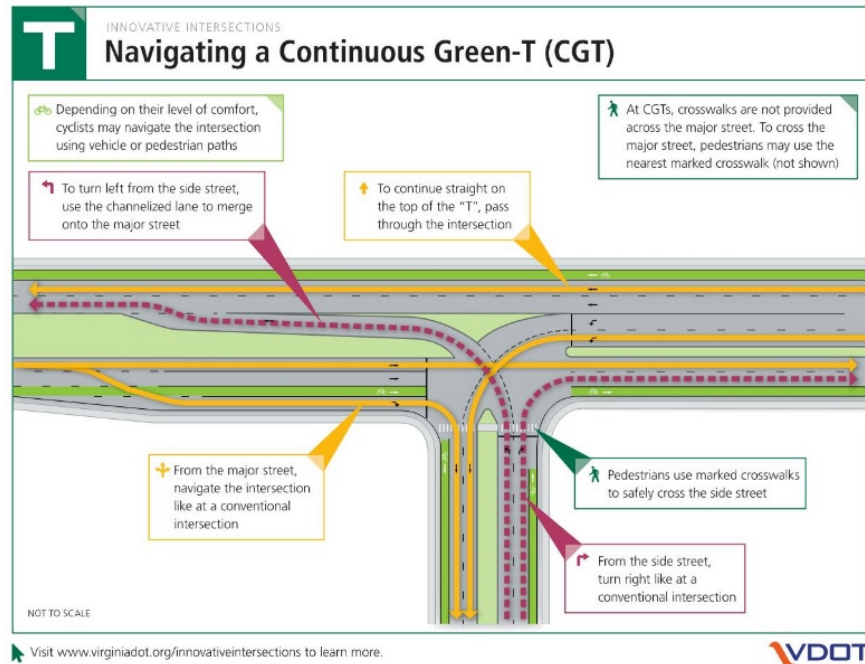


**Figure 9: Alternative 3 - Service Roads**

This option was not advanced beyond the initial screening due to the anticipated significant right-of-way and business access impacts expected along the corridor as well as the high anticipated construction cost of the improvements.

### Alternative 4: Hybrid Arterial

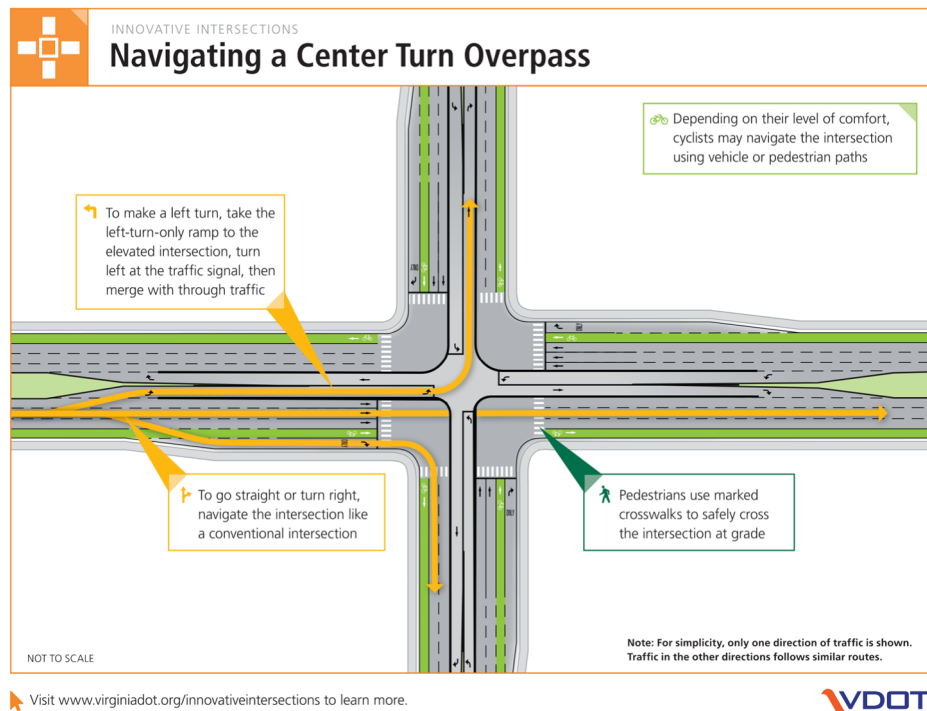
This alternative balances the capacity needs for local and commuter traffic along Route 7. A combination of grade separations west of Cascades Parkway, at-grade intersection improvements, “Green-T” intersections and selected grade separated movements would be employed to convey traffic.



**Figure 10: Green-T Intersection**

The intent would be to facilitate flow of the most critical movements along the corridor. For example, since there is a high volume of traffic between the intersection of Potomac View Road and Route 7 to the east in Fairfax County, a series of median overpasses combined with Green-T intersections will facilitate this traffic flow.

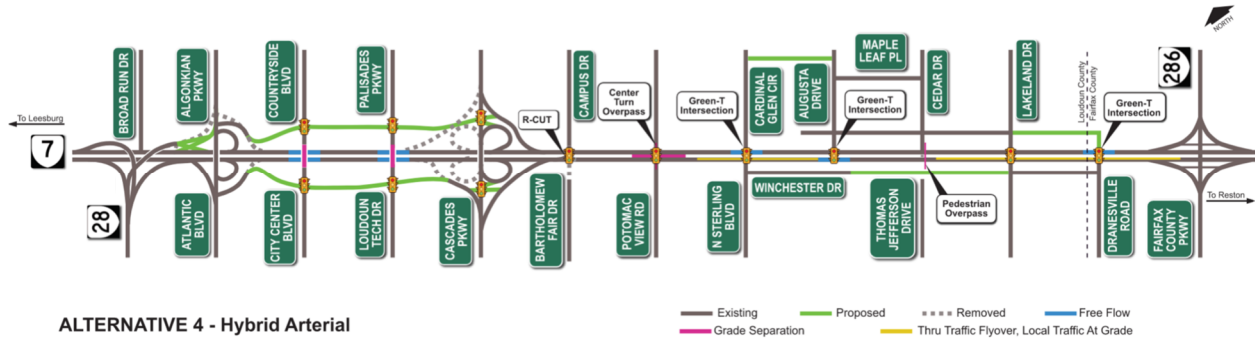
At the Potomac View Road intersection, a center turn overpass would be utilized to elevate all of the left turn movements to an elevated intersection. Both the at-grade and elevated intersections would be controlled by a two-phase signal, greatly improving traffic conditions.



**Figure 11: Center Turn Overpass Intersection**

At Campus Drive a Restricted Center U-Turn (RCUT) intersection would be utilized to maintain full access while minimizing traffic delays along Route 7. The left turn access provided from Route 7 would be controlled by a two-phase signal, greatly improving traffic conditions.

Similarly, to the west of the intersection of Route 7 and Cascades Parkway, there is a significant amount of traffic turning to the cross-streets; by separating these movements from the main line traffic and placing them on service roads, the overall flow of traffic is greatly improved. Alternative 4 also has the benefit of being able to be constructed in multiple phases, allowing smaller segments to be built over time as funding is available.



**Figure 12: Alternative 4 - Hybrid Arterial**

The analysis of this alternative shows that the performance improvements realized from the proposed configuration significantly enhances traffic flow through the corridor while providing for the needed access to the adjacent properties.

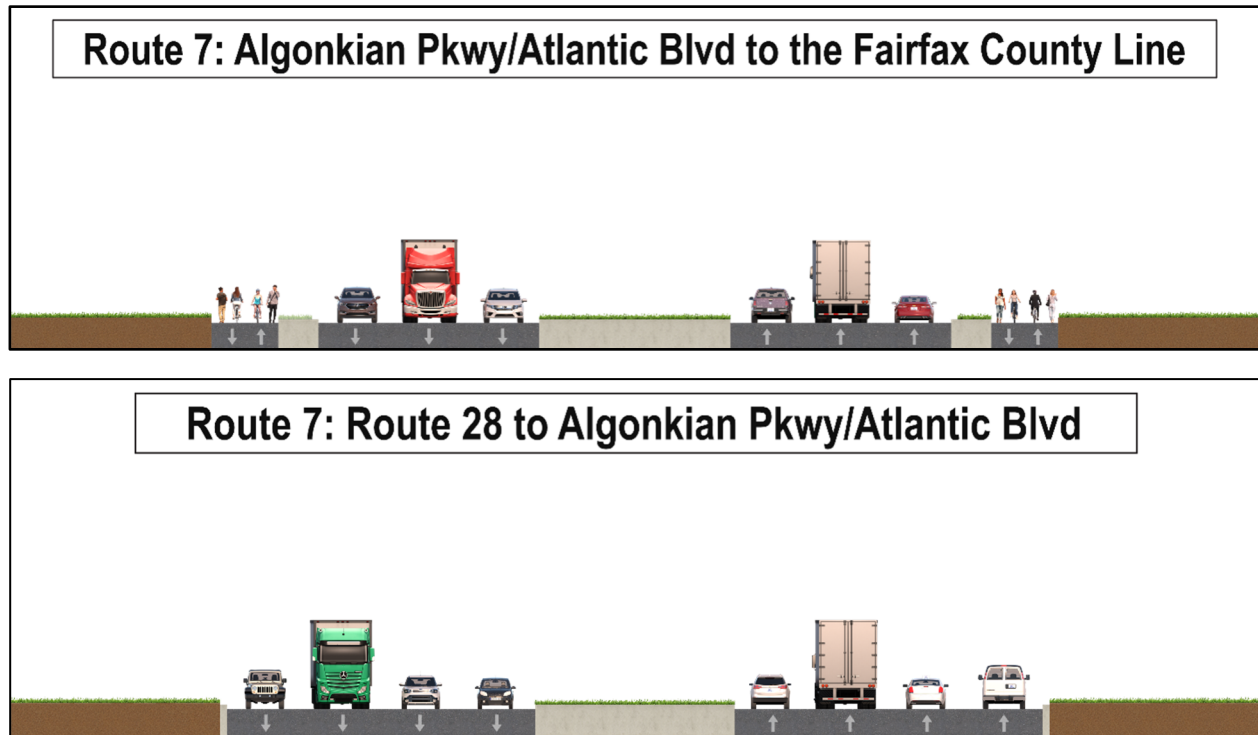
Based on the analysis, Alternative 4 is the recommended alternative and is the basis for conceptual plans, preliminary cost estimates, and other information presented in this report.

#### **A. Design Criteria**

The study section of Route 7 is considered an Other Freeway or Expressway, Geometric Design Standards for Urban Principal Arterial System (GS-5), by VDOT. It is considered a Principal Arterial (Freeway) with limited access west of Algonkian Pkwy/Atlantic Blvd and a Principal Arterial (Other) east of this point in the Loudoun County Countywide Transportation Plan (CTP). The design speed is 55 MPH with a posted speed of 50 MPH west of Cascades Pkwy and the design speed is 50 MPH with a posted speed of 45 MPH east of Cascades Pkwy. The detailed design criteria are found in Appendix 1.

#### **B. Geometry**

The proposed improvements for the roadway will generally retain a section of 3 12-foot lanes. Proposed configurations at each of the intersecting roadways are as shown in Figure 13 below.



**Figure 13: Typical Sections**

### C. Intersection/Access Points

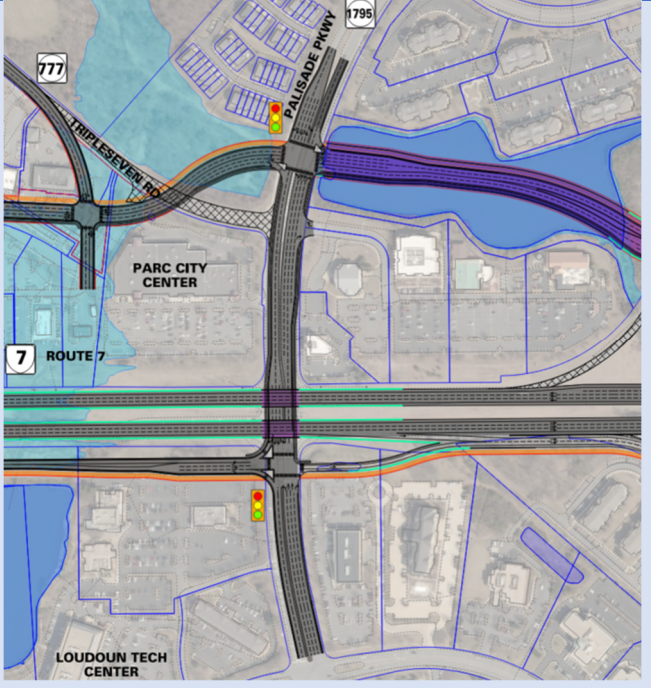

Access to and from Route 7 is proposed to be modified at various locations to improve safety. Impacted locations are shown in Table 3 below.

**Table 3: Existing Route 7 Signalized Intersections to be Modified**

Connecting Roadway	Traffic Signal	Access to/from Route 7	Intersection Concept
City Center Boulevard/ Countryside Boulevard	Removed	Access through existing roadway connections and new service roads	



**Table 3 (continued): Existing Route 7 Signalized Intersections to be Modified**

Connecting Roadway	Traffic Signal	Access to/from Route 7	Intersection Concept
Loudoun Tech Drive/ Palisade Parkway	Removed	Access through existing roadway connections and new service roads	
Bartholomew Fair Drive/ Campus Drive	Modified	Campus Drive Right in/Left in/Right out, Bartholomew Fair Drive Right in/Right out	



**Table 3 (continued): Existing Route 7 Signalized Intersections to be Modified**

Connecting Roadway	Traffic Signal	Access to/from Route 7	Intersection Concept
Potomac View Road	Modified	All access at signal, left turns separated at center turn overpass	
N Sterling Boulevard/ Cardinal Glen Circle	Modified	Cardinal Glen right in/right out, Sterling Blvd Green-T with eastbound Route 7 overpass	



**Table 3 (continued): Existing Route 7 Signalized Intersections to be Modified**

Connecting Roadway	Traffic Signal	Access to/from Route 7	Intersection Concept
<b>Augusta Drive</b>	Modified	All access at Green-T signal	
<b>Community Plaza/ Lakeland Drive</b>	Modified	All access at signal	
<b>Dranesville Road/ Popeyes Access</b>	Modified	Green-T signal with removal of north leg	



#### D. Right-of-way Impacts

The existing right-of-way width along Route 7 varies but is generally approximately 200 feet. The addition of 10-foot shared use paths along both sides of the roadway and or new interchange elements are added, the right-of-way will widen to 220 to 300 feet.

The Corridor Study does not assess right-of-way impacts, but can provide some guides to the level of impact of an alternative. Only after preliminary engineering is begun can the right-of-way impact be clearly defined. In this study, it appeared that up to 80 parcels may be impacted in some form by Alternative 4. Additional parcels will be impacted by temporary construction easements, permanent drainage easements, and required utility relocations and easements. The proposed plan in Appendix 2 shows the corridor studied for Alternative 4, and the potential right-of-way impacts associated with this concept.

#### E. Utilities

Utilities in the project area may need to be relocated if they conflict with the proposed design and construction. The team contacted the utility companies to further investigate the limits of the facilities. Utilities in the project area are listed in Table 4: Potential Utility Impacts.

**Table 4: Potential Utility Impacts**

Utility	
AT&T	Lumen
Comcast	Lumos Network
Cox	NCI
Dark fiber	TEG bandwidth
Dominion Energy	QWEST
Fairfax Water and sewer	SummitIG
Fiberlight	Verizon
(Level 3) CenturyLink	Washington Gas
Loudoun County Water & Sewer	Zayo

#### F. Stormwater Management

There are opportunities for future stormwater facilities along the project corridor and these are presented within the concept plans as well as existing stormwater facilities that are within the proposed project limits. Modification of existing facilities or the addition of new stormwater facilities is available within interchange areas, especially where existing roadway facilities are being removed. There are also opportunities within the corridor at locations where the reduction of vehicle access points results in less developable areas. Stormwater facilities will be analyzed for cost to benefits during the design phase of the project and the water quality, pre- and post-runoff quantities and energy balance will be analyzed to affect the most reasonably balanced outcome for cost to benefits.

There are minor floodplains located within the project limits, primarily between Countryside Blvd/City Center Blvd and the Cascades Pkwy interchange. The project limits are close to the

major floodplain limits of Sugarland Run and impacts to this floodplain should be avoided if possible. The proposed impacts to the floodplains will be coordinated with the Loudoun County Flood Plain Administrator during the design phase of the project. Floodplains in the vicinity of the project are depicted in Figure 14 below.



**Figure 14: Floodplain Map**

### G. Bicycle/Pedestrian Accommodations

Bicycle and pedestrian facilities are proposed that meet the requirements of the 2019 Comprehensive Transportation Plan. Shared use paths parallel to both eastbound and westbound Route 7 are shown on the concept plans. Connectivity across Route 7 is provided via pedestrian bridges between Augusta Drive and Cedar Drive, and at Campus Drive/Bartholomew Fair Drive as well as pedestrian crossings provided at the following locations:

- Algonkian Parkway (grade separated)
- City Center Boulevard (grade separated)
- Palisade Parkway (grade separated)
- Cascades Parkway (grade separated)
- Potomac View Road



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- Cardinal Glen Circle/N Sterling Boulevard
- Lakeland Drive/Community Plaza

Connections made by pedestrian improvements currently being designed within the corridor as part of the Route 7 Pedestrian Improvement project may be modified as part of ultimate improvements. This project includes improvements at Bartholomew Fair Drive (Route 1792)/Campus Drive, Potomac View Road and Lakeland Drive (Route 821) and is described in more detail above in section II.I.

#### **H. Cost Estimate**

The construction costs for the project were estimated using planning level quantities and unit costs and percentages of total construction value for items that are more difficult to quantify at this stage of plan development. Right-of-way costs were estimated using square footage of parcel impacts and are subject to review and adjustment by experienced right-of-way professionals. The total planning level estimate for this project is \$423,980,000 including the subtotals below.

Construction	\$237,390,000
Utilities	\$ 16,690,000
Right-of-way	\$ 17,460,000
Engineering	\$ 38,110,000
Construction Engr & Inspection	\$ 38,110,000
Contingency	\$ 76,220,000

The cost estimation worksheet is provided in Appendix 3.



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## V. Potential Interim Safety Improvements

To enhance responsiveness in addressing safety and operational problems at intersections, DTCI has developed a data-driven plan, the Countywide Roadway Intersection Improvement Program, to systematically identify problematic intersections in advance of incidents or complaints. The program recommendations involved conducting an inventory of non-signalized, signalized, and roundabout intersections along roadways listed in the Countywide Transportation Plan (CTP) and non-CTP roadways of significance. The plan evaluated intersections based on traffic volumes and crash history. From this data, the intersections are ranked on a scale from one (1) through five (5) where a ranking of five represents the most critical intersections requiring improvements and a ranking of one indicates the lowest priority intersections.

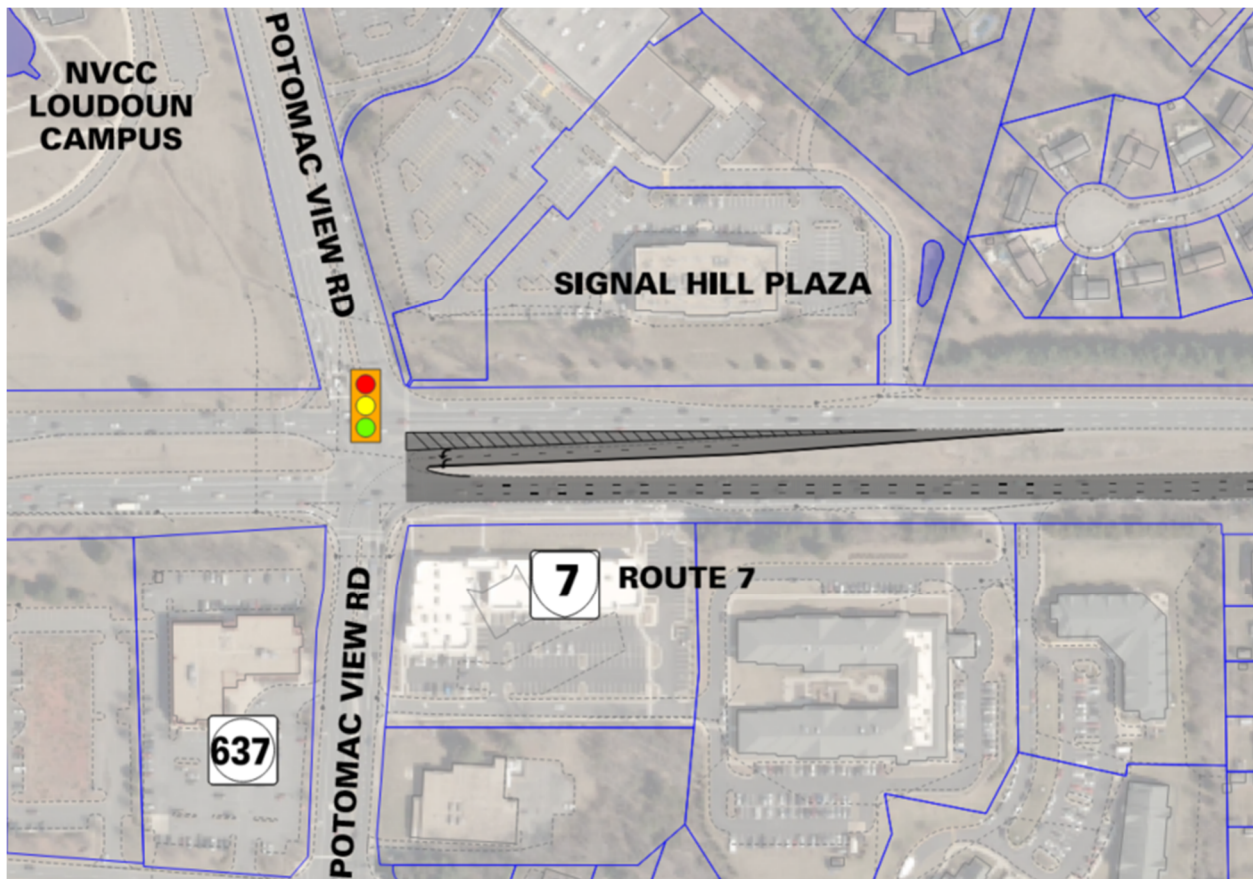
Following is a list of intersections that are included in the Corridor Study and ranked a #5 in the Countywide Roadway Intersection Improvement Program. The section describes potential safety improvements that can be implemented in a shorter time frame than the recommended plan. Most of these interim improvements may be retained when the recommended plan is implemented.

In addition to addressing the long-term improvement plan, the study has also focused on prioritizing some safety improvements along the corridor as interim measures until the full complement of proposed improvements is implemented. Following is a list of these potential safety improvements. The FHWA Crash Modification Factor (CMF) Clearinghouse was consulted to provide crash reduction factors (CRF), when available, for each of these proposed safety improvements. These factors estimate the percentage of reduction that can be expected in the number of crashes occurring at the improved location. If no specific type or severity of crash is mentioned in conjunction with the CRF then the CRF applies to all crash types and severity levels. These improvements may be implemented in a shorter time frame than the recommended plan. Most of these interim improvements may be retained when the recommended plan is implemented. Cost estimates for the proposed interim safety improvements are located in Appendix 5.

**Potomac View Road**

1. Extend westbound left turn storage length and angle away from adjacent thru lanes.

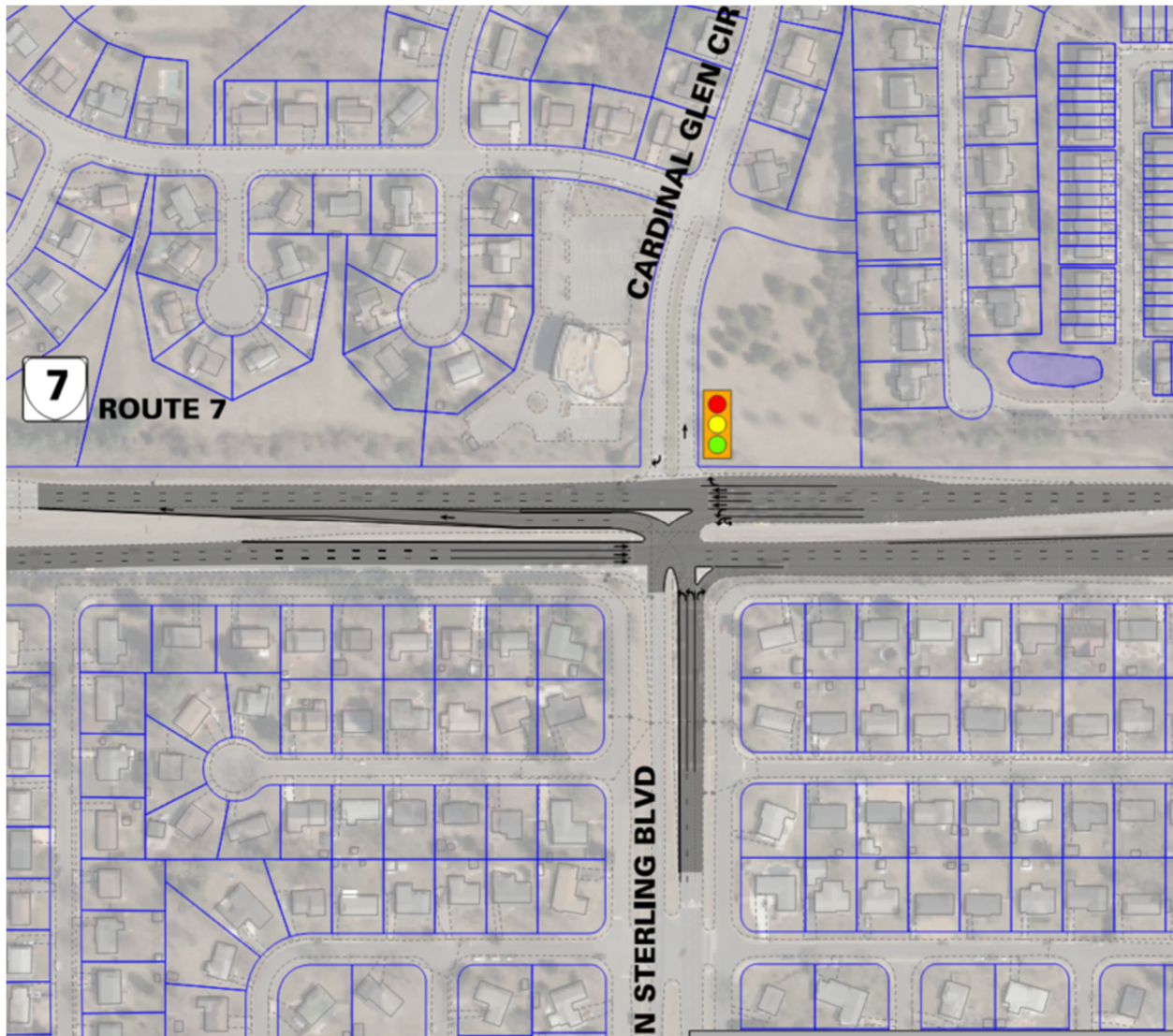
*Safety issue addressed:* Westbound sideswipe crashes; vehicles may be trying to squeeze past queued thru vehicles to access the left-turn lanes. There was one relevant report from the CMF Clearinghouse and it associated a CRF of 25% with this safety improvement.



**Figure 15: Potomac View Road Interim Improvements**

### North Sterling Boulevard

1. Green-T Intersection for Sterling Boulevard with right in/right out-only for Cardinal Glen Circle. *Safety issue addressed:* Reduces number of conflict points at the intersection; makes westbound free-flow to reduce westbound rear-end crashes. There was one relevant report from the CMF Clearinghouse and it associated a CRF of 8% with this safety improvement.



**Figure 16: North Sterling Boulevard Interim Improvements**

2. Change northbound approach to L, L, T, R and southbound approach to L, shared TR; replace north/south split-phasing with concurrent protected-only northbound and southbound left-turn phasing. *Safety issue addressed:* Simplifies northbound approach by eliminating the existing triple-left turn lanes and the confusing shared left/thru/right-turn lane. No applicable CRFs were identified in the CMF Clearinghouse for this recommended option.

3. Replace painted northbound right turn channelizing island with a raised concrete island.  
*Safety issue addressed:* Simplifies the northbound right-turn movement which may improve northbound traffic flow and reduce rear-end and sideswipe crashes. There was one relevant report from the CMF Clearinghouse and it associated an injury CRF of 8% and a property damage only CRF of 19% with this safety improvement.

### Augusta Drive

1. Green-T Intersection.

*Safety issue addressed:* Reduces number of conflict points at the intersection; makes eastbound free-flow to reduce EB rear-end crashes. There was one relevant report from the CMF Clearinghouse and it associated a CRF of 8% with this safety improvement.



Figure 17: Augusta Drive Interim Improvements

2. Southbound approach No Turn on Red.

*Safety issue addressed:* May reduce likelihood of angle crashes due to apparent insufficient sight distance looking left from the SB approach. There was one relevant report from the CMF Clearinghouse and it associated an injury CRF of -60% and a property damage only CRF of -10% with *providing Right Turn on Red*. Since these negative CRFs represent *increases in crashes based on the current condition at the intersection*, an equivalent *decrease in crashes* should be expected if Right Turn on Red is *prohibited*.

3. Move southbound right turn lane stop line closer to the intersection and allow right turn on Red.

*Safety issue addressed:* May improve sight distance looking left from the southbound approach for right turns and reduces the likelihood of angle crashes. No applicable CRFs were identified in the CMF Clearinghouse for this recommended option.

### Cedar Drive

1. Close the median crossover and make southbound approach right in/right out-only (analysis should divert traffic to U-turns eastbound at Lakeland Drive and westbound at Augusta Drive).

*Safety issue addressed:* Reduces number of conflict points at this unsignalized intersection. There was one relevant report from the CMF Clearinghouse and it associated a CRF of 45% with this safety improvement.

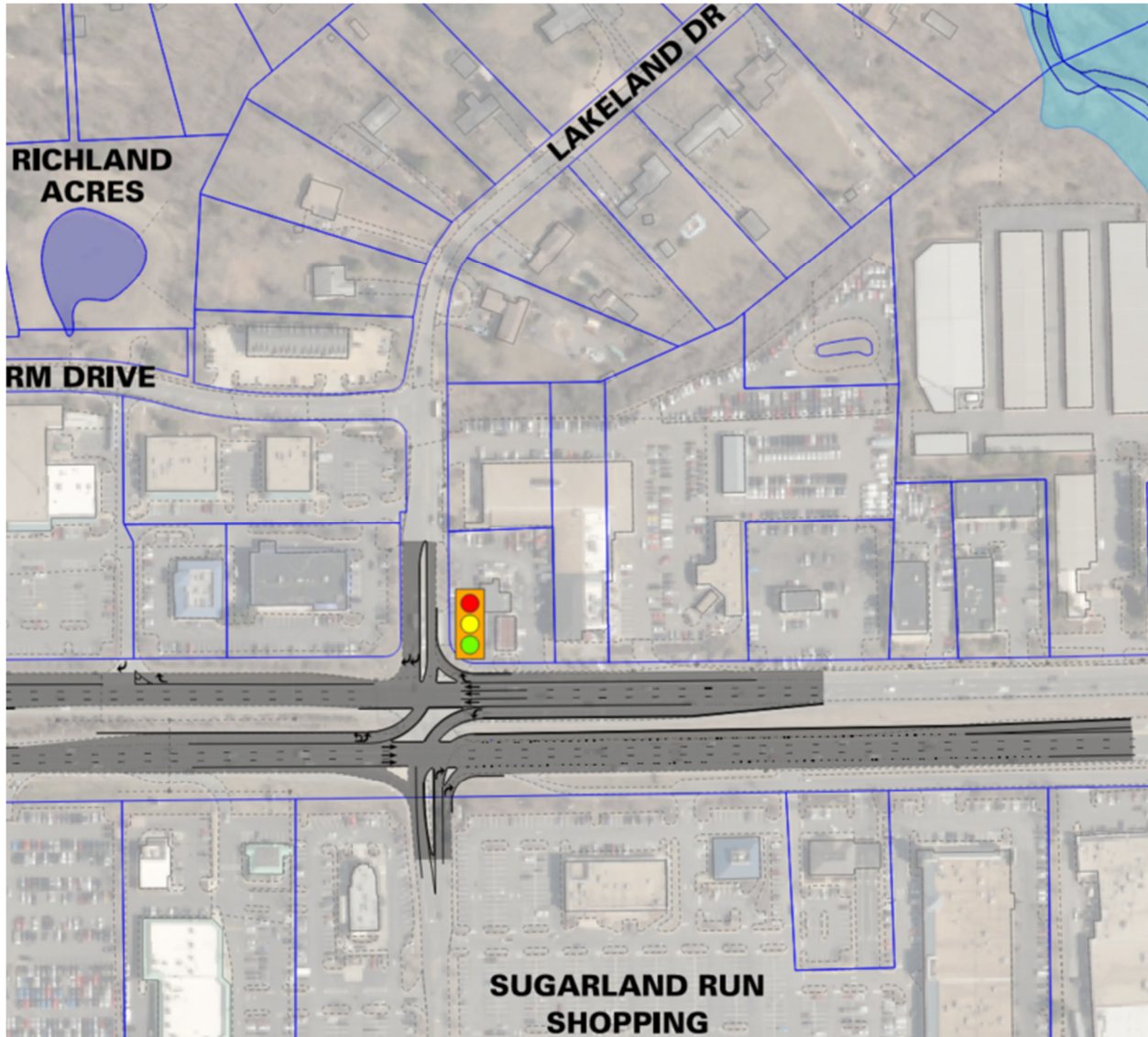


Figure 18: Cedar Drive Interim Improvements

**Lakeland Drive and Community Plaza**

1. Convert to Restricted Center U-Turn intersection (Northbound and southbound approaches are right-turn only, with U-turns downstream eastbound at Dranesville Road and westbound at Augusta Drive; close Cedar Drive median crossover for this option).

*Safety issue addressed:* Reduces number of conflict points. There was one relevant report from the CMF Clearinghouse and it associated a CRF of 15% with this safety improvement.



**Figure 19: Lakeland Drive and Community Plaza Interim Improvements**



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## VI. Public Involvement and Outreach

As part of the concept plan development, public involvement outreach was conducted. The purpose of this outreach was to inform the citizens of the development of the concept plan and to present options and recommendations related to the subject project.

On July 12, 2021, from 6:00 pm to 7:00 pm, a virtual public meeting was conducted by the Loudoun County Department of Transportation and their consultant, Rummel, Klepper & Kahl, LLP. In this meeting, the following items were discussed:

- Purpose and Need for the project;
- Traffic analysis for the existing and proposed conditions;
- The array of alternatives studied;
- The Recommended alternative; and
- The proposed interim improvements.

Prior to the meeting, attendees were offered the opportunity to submit questions and concerns. The comments received prior to the meeting were read into the record and addressed by the team conducting the meeting. The meeting was opened to additional comments after the presentation was made and the submitted comments were addressed.

Loudoun County is maintaining a web site for the proposed improvements at the following location: [www.loudoun.gov/route7corridorstudy](http://www.loudoun.gov/route7corridorstudy)

This web site includes the following:

- Proposed alternatives;
- the July 12, 2021 Public Meeting presentation; and
- a recording of the July 12, 2021 Public Meeting.

Additional outreach and communications were also made to the following:

- Supervisor Sylvia Glass, Broad Run District;
- Vice Chairman Koran Saines, Sterling District;
- Supervisor Juli Briskman, Algonkian District;
- Northern Virginia Community College, Loudoun Campus;
- Fairfax County Department of Transportation; and
- Virginia Department of Transportation, Northern Virginia District.

Comments received through July 26, 2021, and responses by the team are included in Appendix 4.



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## VII. Next Steps

This report covers the work associated with the Route 7 Corridor Study. A proposed plan for improvements was developed based on the identification of safety and operational trouble spots and a forecast of future year traffic. Preliminary stormwater studies were also completed. To execute the full project, the following steps are recommended:

1. Secure funding
2. Progress design
3. Evaluate environmental and permitting needs
4. Additional public involvement including community presentations
5. Initiate project implementation



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## VIII. Appendices

1. Design Criteria
2. Concept Plan
3. Cost Estimate
4. Public Comments through July 26, 2021
5. Potential Interim Safety Improvements Cost Estimates



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## Appendix 1: Design Criteria

**Route 7 Corridor Route 28 to the County Line**  
**August 16, 2021**  
**RKK Project Number: 18224.001**  
**Loudoun County Contract Number: RFQ 585-D**

**Design Criteria Route 7 Corridor Study**

Roadway: Route 7  
Project Limits: Route 28 to the Fairfax County Line  
Design Goals: Analyze roadway improvement options

Source	VDOT	Loudoun County CTP	AASHTO
Area System Urban/Rural	Urban		
Functional Classification	Other Principal Arterial	Principal Arterial (Other) Algonkian Pkwy/Atlantic Blvd to Fairfax County Line Principal Arterial (Freeway) Route 28 to Algonkian Pkwy/Atlantic Blvd	
Design Speed (mph)	55 mph (Route 28 to Cascades Pkwy) 50 mph (Cascades Pkwy to County Line)		
Posted Speed (mph)	50 mph (Route 28 to Cascades Pkwy) 45 mph (Cascades Pkwy to County Line)		
Number of Through Lanes	6 (3 in each direction)	6 - Algonkian Pkwy/Atlantic Blvd to County Line 8 - Route 28 to Algonkian Pkwy/Atlantic Blvd	
Roadway Typology	Rolling		
Ultimate Access Type		Controlled Algonkian Pkwy/Atlantic Blvd to County Line	
Bike/Pedestrian Facilities		Off street	
Right-of-Way Width		Varies/Subject to DTCL Review - Algonkian Pkwy/Atlantic Blvd to County Line 200' - Route 28 to Algonkian Pkwy/Atlantic Blvd (TT) - Algonkian Pkwy/Atlantic Blvd to County Line	
Ultimate Cross Section		U6M (TT) - Algonkian Pkwy/Atlantic Blvd to County Line U8F - Route 28 to Algonkian Pkwy/Atlantic Blvd	
Geometric Design Standards	GS-5 (GS-1) (Route 28 to Cascades Pkwy) GS-5 (Cascades Pkwy to County Line)		
Lane Width	12'		
Shoulder Width	14' with guardrail, 10' without GR Left minimum paved 4' Right minimum paved 8'		
Maximum Super elevation:	8% (Route 28 to Cascades Pkwy) 4% (Cascades Pkwy to County Line)		
Minimum Horizontal Radius	GS-1, 1204' (Route 28 to Cascades Pkwy); GS-5 929' (Cascades Pkwy to County Line)		Table 3-7 960' (Route 28 to Cascades Pkwy) 926' (Cascades Pkwy to County Line)
Minimum Vertical Grade			0.3% min, 0.5% desirable
Maximum Vertical Grade			Table 7-4a 6% (Route 28 to Cascades Pkwy) 7% (Cascades Pkwy to County Line)
Minimum Stopping Sign Distance	GS-5 570' (Route 28 to Cascades Pkwy) 425' (Cascades Pkwy to County Line)		Table 3-2 474' (6% downgrade) (Cascades Pkwy to County Line)
Intersection Sight Distance	Appendix F, Table 2-5 720' (50 mph design) 790' (55 mph design)		
Minimum Vertical Clearance	16'6"		
Curb and Gutter	CG-7		
Future Design Year	2045		
TOSAM	Version 2.0		
VDOT VISSIM User Guide	Version 2.0		



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Loudoun County, Virginia

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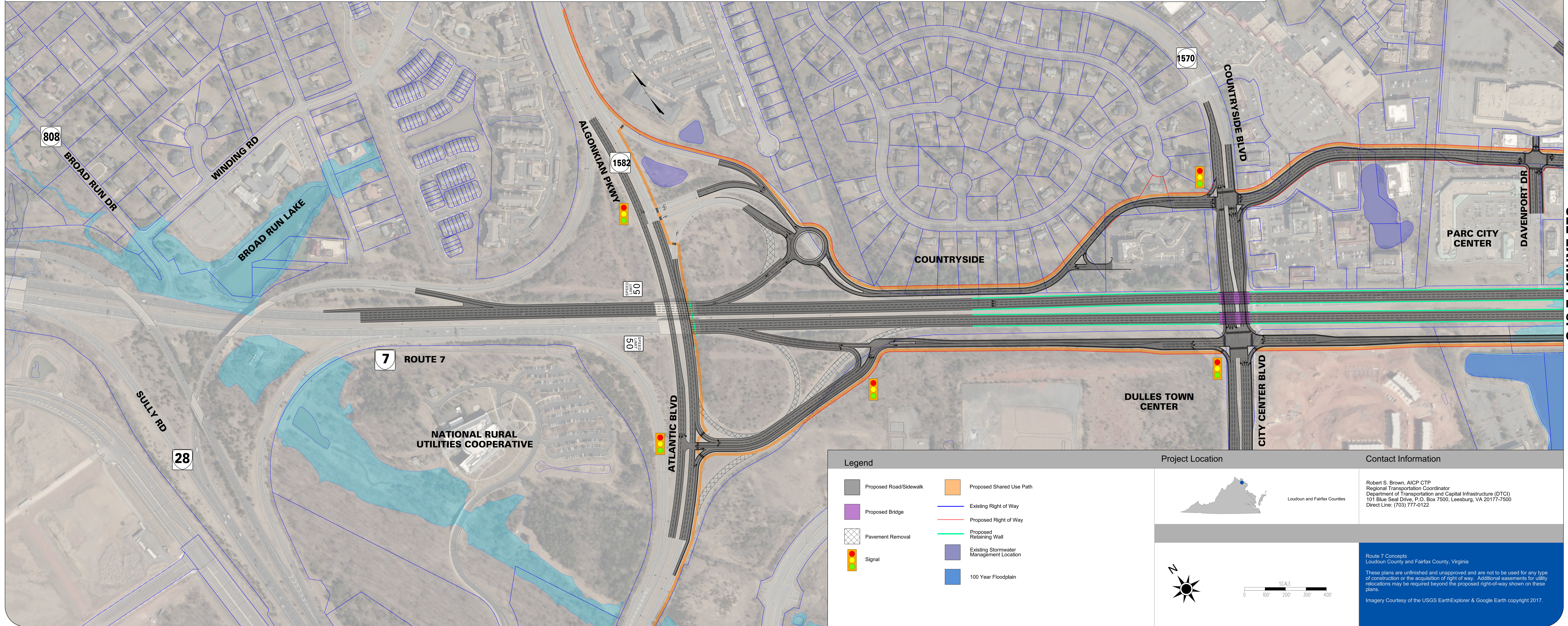
## Appendix 2: Concept Plan



# STATE ROUTE 7 CONCEPTS - ALTERNATIVE 4

## EXHIBIT 1 of 3: ROUTE 28 TO CITY CENTER BOULEVARD

DRAFT AUGUST 2021



SEE EXHIBIT 2 of 3

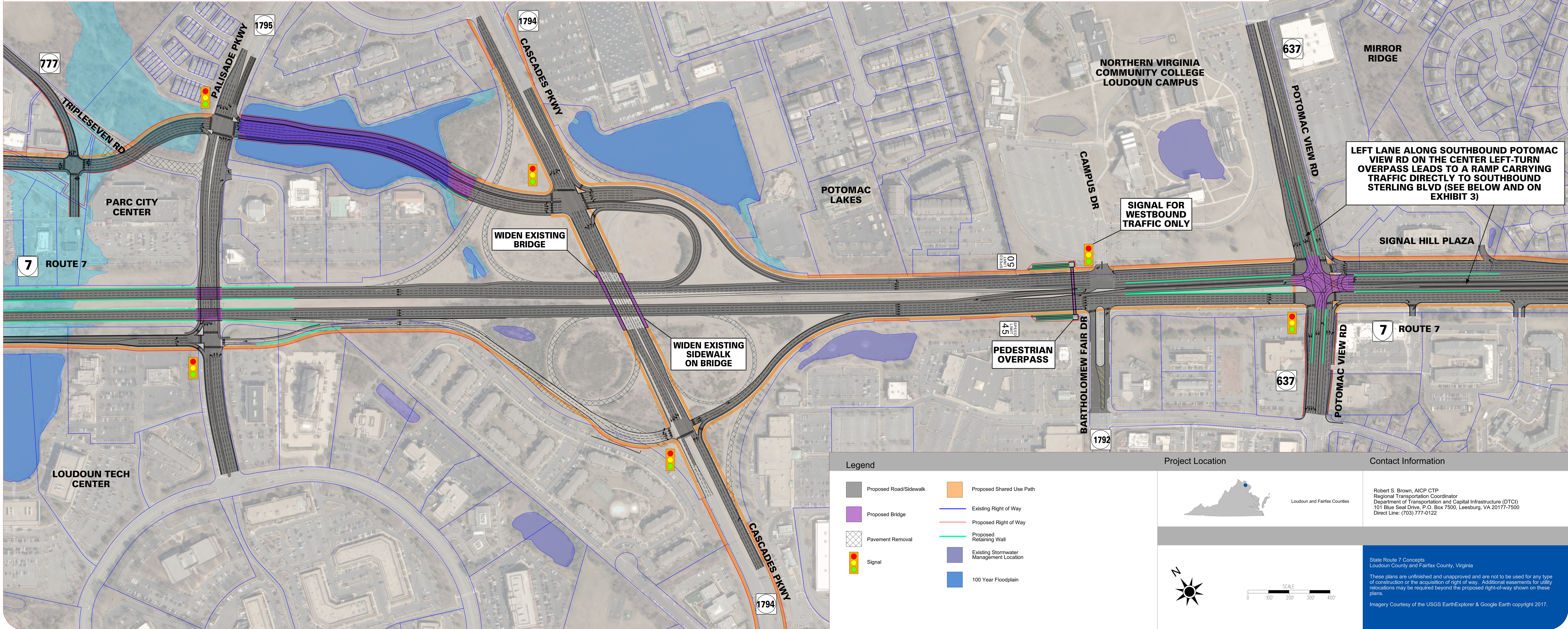


# STATE ROUTE 7 CONCEPTS - ALTERNATIVE 4

## EXHIBIT 2 of 3: PALISADE PARKWAY TO POTOMAC VIEW ROAD

DRAFT AUGUST 2021

SEE EXHIBIT 1 of 3



SEE EXHIBIT 3 of 3

LEFT LANE ALONG SOUTHBOUND POTOMAC VIEW RD ON THE CENTER LEFT-TURN OVERPASS LEADS TO A RAMP CARRYING TRAFFIC DIRECTLY TO SOUTHBOUND STERLING BLVD (SEE BELOW AND ON EXHIBIT 3)

SIGNAL FOR WESTBOUND TRAFFIC ONLY

SIGNAL HILL PLAZA

WIDEN EXISTING BRIDGE

WIDEN EXISTING SIDEWALK ON BRIDGE

PEDESTRIAN OVERPASS



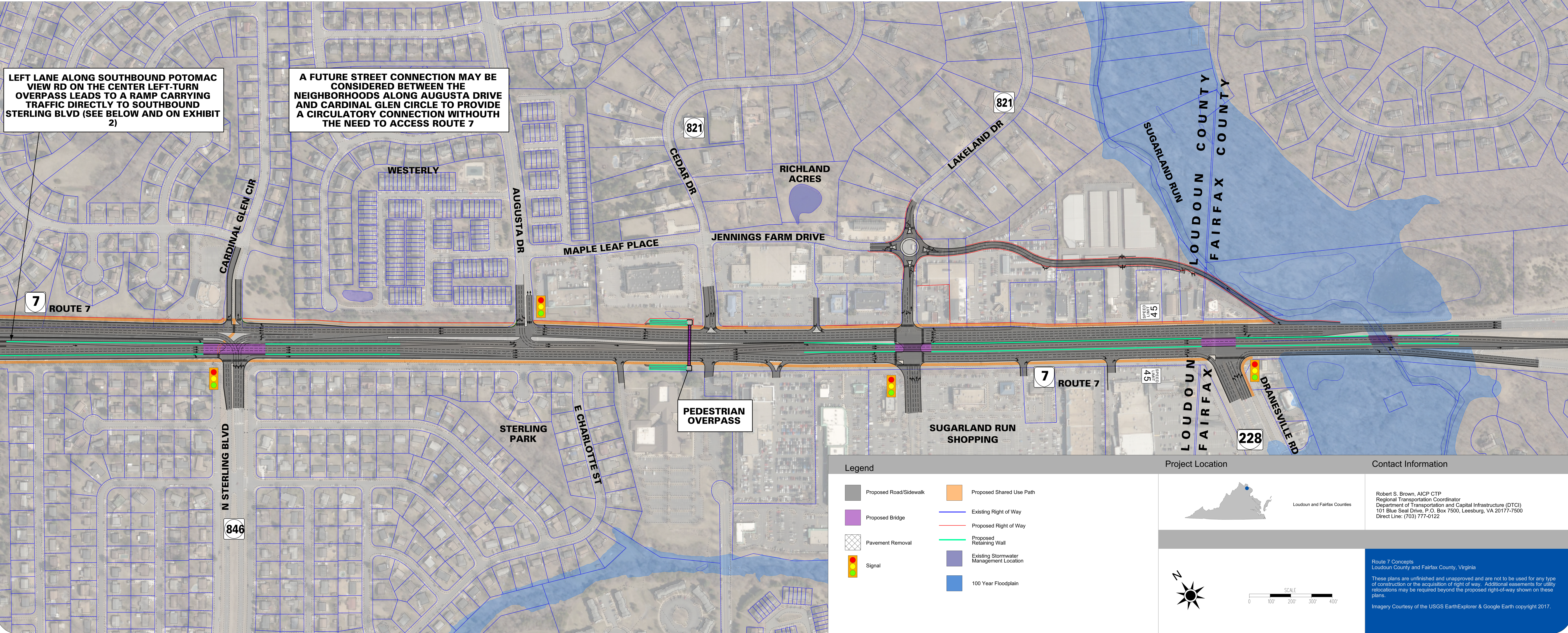
# STATE ROUTE 7 CONCEPTS - ALTERNATIVE 4

## EXHIBIT 3 of 3: STERLING BOULEVARD TO DRANESVILLE ROAD

DRAFT AUGUST 2021

LEFT LANE ALONG SOUTHBOUND POTOMAC VIEW RD ON THE CENTER LEFT-TURN OVERPASS LEADS TO A RAMP CARRYING TRAFFIC DIRECTLY TO SOUTHBOUND STERLING BLVD (SEE BELOW AND ON EXHIBIT 2)

A FUTURE STREET CONNECTION MAY BE CONSIDERED BETWEEN THE NEIGHBORHOODS ALONG AUGUSTA DRIVE AND CARDINAL GLEN CIRCLE TO PROVIDE A CIRCULATORY CONNECTION WITHOUT THE NEED TO ACCESS ROUTE 7



### Legend

	Proposed Road/Sidewalk		Proposed Shared Use Path
	Proposed Bridge		Existing Right of Way
	Pavement Removal		Proposed Right of Way
	Signal		Proposed Retaining Wall
			Existing Stormwater Management Location
			100 Year Floodplain

### Project Location

Loudoun and Fairfax Counties

### Contact Information

Robert S. Brown, AICP CTP  
Regional Transportation Coordinator  
Department of Transportation and Capital Infrastructure (DTCI)  
101 Blue Seal Drive, P.O. Box 7500, Leesburg, VA 20177-7500  
Direct Line: (703) 777-0122

### Route 7 Concepts

Loudoun County and Fairfax County, Virginia

These plans are unfinished and unapproved and are not to be used for any type of construction or the acquisition of right of way. Additional easements for utility relocations may be required beyond the proposed right-of-way shown on these plans.

Imagery Courtesy of the USGS EarthExplorer & Google Earth copyright 2017.



**DRAFT**

Route 7 Corridor Study  
Route 28 to the Fairfax County Line  
Loudoun County, Virginia

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## Appendix 3: Cost Estimate

**Route 7 Corridor Study from Route 28 to the Loudoun/Fairfax County Line**  
**Alternative 4**

Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	MOBILIZATION	LS	1	\$ 12,130,000	\$ 12,130,000
2	CLEARING & GRUBBING	LS	1	\$ 620,000	\$ 620,000
3	EARTHWORK	LS	1	\$ 10,500,000	\$ 10,500,000
4	PAVEMENT ITEMS	LS	1	\$ 18,300,000	\$ 18,300,000
5	INCIDENTALS	LS	1	\$ 7,630,000	\$ 7,630,000
6	SIGNING AND PAVEMENT MARKING (3%)	LS	1	\$ 7,150,000	\$ 7,150,000
7	DRAINAGE (15%)	LS	1	\$ 35,750,000	\$ 35,750,000
8	EROSION & SEDIMENT CONTROL/TEMP. DRAINAGE (5%)	LS	1	\$ 11,920,000	\$ 11,920,000
9	MAINTENANCE OF TRAFFIC (5%)	LS	1	\$ 11,920,000	\$ 11,920,000
10	LANDSCAPING (2%)	LS	1	\$ 4,770,000	\$ 4,770,000
11	UTILITIES (7%)	LS	1	\$ 16,690,000	\$ 16,690,000
12	PEDESTRIAN BRIDGE	LS	2	\$ 6,000,000	\$ 12,000,000
13	BRIDGES	LS	1	\$ 82,500,000	\$ 82,500,000
14	SIGNALIZATION	EA	15	\$ 300,000	\$ 4,500,000
15	MSE WALL	LS	1	\$ 17,700,000	\$ 17,700,000
	<b>SUB-TOTAL</b>				\$ 254,080,000
	RIGHT OF WAY				\$ 17,460,000
	ENGINEERING DESIGN(15%)				\$ 38,110,000
	CONSTRUCTION ENGINEERING & INSPECTION (15%)				\$ 38,110,000
	CONTINGENCY (30%)				\$ 76,220,000
	<b>TOTAL</b>				\$ 423,980,000

**NOTES:**

Pavement Items include; removal of existing pavement, full depth construction of roadway and Shared Use Path, and resurfacing

Incidentals include; Curbs, curb and gutter, medians, median barriers, and sidewalks.

Bridge parapet barrier included in MSE Wall estimate.



**DRAFT**

Route 7 Corridor Study  
Route 28 to the Fairfax County Line  
Loudoun County, Virginia

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## Appendix 4: Public Comments through July 26, 2021

## Route 7 Corridor Study – Route 28 to Fairfax County Line

### Summary of Public Meeting Questions and Comments

<b>Q1. What will the zoning laws require?</b>	
A:	<ul style="list-style-type: none"> <li>The proposed improvements will not require any changes to the zoning in the area.</li> </ul>
<b>Q2. Is there a plan to fix pedestrian safety in the area especially around Potomac View? Currently, Potomac View Road and Harry Byrd Highway is the second-worst intersection in the county. There is a lot of foot traffic in the area now.</b>	
A:	<ul style="list-style-type: none"> <li>Bicycle and pedestrian safety are among the primary concerns of this study. The proposed improvements will include shared use paths along both sides of Route 7. Most signalized intersections will include full pedestrian crossings with crosswalks and pedestrian countdown signals. Locations where a crosswalk across Route 7 is not feasible, pedestrian overpasses are being considered nearby for pedestrian/bicycle connectivity.</li> </ul>
<p><b>Comment1.</b> I strongly support Option 3, the Frontage Road solution, for Route 7 between Rt 28 and the FFX county line. I live near Claude Moore Park, Potomac View Rd and Sterling Blvd. and adding traffic lights or adding lanes would be wasted money on a short-sighted band-aid solution. Previous improvements to the Sterling Route 7 corridor have yielded negligible effects on traffic. I can guarantee that traffic by 2040 will certainly not be any lighter, and long-term solutions must be considered, similar to what was done thru Ashburn and Leesburg. While I recognize that businesses along Route 7 would be impacted by construction and frontage road configuration, I think safety and commute times of the citizens take precedence over Sterling's many strip malls.</p>	
A:	<ul style="list-style-type: none"> <li>Response: The study team reviewed four Alternatives. The Frontage Road solution suggested has merit, but it was found to be overly impactful through the entire corridor. For this reason, the team undertook the study of Alternative 4, which incorporated the frontage road concept to the west of Cascades Parkway but implemented an at-grade solution with selected overpass movements to the east of Cascades Parkway – allowing access to the commercial properties fronting Route 7 in that area. In addition, accommodations for pedestrians and bicyclists were considered and added throughout the corridor.</li> </ul>
<p><b>Comment2.</b> I am very concerned about the impacts of Alternative 1 for local traffic to get around Sterling. I live north of Route 7 near the Countryside Blvd signal, and if I understand Alternative 1 correctly, to access eastbound Route 7 or to go across Route 7, I will need to double back to Palisade Pkwy or Davenport Drive to get on Route 7 westbound, then go back toward my home to make a U-</p>	

Turn or a left turn to go eastbound on Route 7 or southbound across it. This will greatly increase my travel time for any eastbound or southbound trip right within town and will turn short trips to places like Potomac Run Plaza or Nokes Blvd into much longer ones. For the minimal benefits that Alternative 1 would have for through traffic, I do not see this as a good tradeoff for local travel being greatly constrained, and all of the cost of construction. I would like to see an Alternative 2 developed where more left turn lanes are added wherever possible, and merge lanes replace right turn lanes.

A:	<ul style="list-style-type: none"> <li>Response: Alternative 1 is the “Superstreet” option. This alternative was evaluated, and the Team decided to drop the option from consideration, for two reasons: 1. The operations of the corridor were not improved to the point of warranting the change; 2. Citizen’s concern over the turning movements required for certain movements were noted. Three other alternatives were considered to improve traffic flow but did not consider additional left-turn lanes or merge lanes.</li> </ul>
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**Comment3. Comments from Northern Virginia Community College, on behalf of Virginia Community College System Office.**

- Removal of accessibility via Rt 7 driveway at Campus Drive is a serious detriment to the college.
- Elevated roadway decreases visibility of the only marquis road signage currently installed on Rt 7.
- Potomac View elevated roadway width ROW potentially impacts LC Parking lot. State granting of ROW is lengthy process; DOT should quantify ROW alterations soon.
- Removal of convenience of Rt 7 driveway at Campus Drive may potentially decrease enrollment.
- Potomac View elevated roadway ROW width may impact trees, aesthetics, and lighting at LC parking lot.
- Potomac View elevated roadway width may relocate utilities adversely close to LC parking lot.
- NOVA requests that the utilities be placed underground to mitigate aesthetic challenges. Also, will need new landscaping to offset removed trees.
- NOVA very concerned about impact of all DOT proposed projects upon campus trees and utilities.
- Making Potomac View the primary method of accessing the campus will increase traffic to drive all the way across campus to get to the largest lot which is next to the Campus Drive (proposed to be inaccessible from Rt. 7).
- Removal of Campus Drive access at Rt 7 significantly decreases convenience of access to LC and HEC buildings which are newest, and focal point of campus.
- Intent of Masterplan update currently in design is that the campus will remain “facing” Rt 7.

A:	<p>Response: After meeting with Northern Virginia Community College (NVCC) on June 30, 2021, the Team has undertaken additional study of the access to the campus. This includes:</p> <ul style="list-style-type: none"> <li>• An origin/destination study to determine where trips to NVCC begin and end;</li> </ul>
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	<ul style="list-style-type: none"> <li>• Evaluation of an alternative to preserve the eastbound left-turn traffic into the campus and the westbound right-in/right-out of the campus. Eastbound traffic from the campus will still need to use Potomac View Road.</li> <li>• The Team believes that the improvements along Potomac View Road can be installed without impacting the LC parking lot.</li> <li>• It is understood that acquiring right of way from state property is a lengthy process and ample time will be included in the project schedule to account for such acquisitions.</li> <li>• The Team does not have the ability to evaluate the impact of these improvements on campus enrollment.</li> <li>• Impacts to trees, aesthetics and lighting will be addressed as designs progress, including the potential for new landscaping.</li> <li>• The concern about increasing internal circulation in the campus is acknowledged; the Team is investigating alternatives to closing the Campus Drive access completely to address this concern.</li> <li>• The concern about convenience of access is acknowledged.</li> <li>• The intent to keep the campus “facing” Route 7 is acknowledged.</li> </ul>
<p><b>Comment4. The real problem with Rt 7 is the improper timed lights. There are numerous times that I can hit every light between Dransville Road and Rt 28. I see cars running lights quite frequently because of this. If you run them, you just might not hit the other lights. Also, Sterling Blvd and Potomac View should be overpasses or at least have long right turn lanes. Because of Potomac View being on top of a hill there is a line-of-sight problem for the right turn lanes on either side of the street. Long turn lanes or any turn lanes on that street would solve that. How you allowed a sopping development to come in and not put a turn lane in is just stupid. I have lived off Augusta for over 20 years. I have had lots of time to study this problem and the above are my suggestions to fix the problems. My suggestions are certainly a cheaper and a quicker solution than trying the 3 alternative solutions you have suggested.</b></p>	
<b>A:</b>	<ul style="list-style-type: none"> <li>• Response: The concern over traffic signal timing is acknowledged. VDOT regularly conducts a study of the corridor and adjusts signal timings in response to changing traffic characteristics. As noted in the study, it is anticipated that traffic growth in the corridor will exceed 20 percent in the next 20 years and will further strain the capacity of the road. Therefore, improvement to the corridor is deemed to be warranted.</li> </ul>
<p><b>Comment5. My concern is with pedestrian crossings across Rt 7. Overpasses or tunnels are needed as pedestrians can't get a break in traffic to cross safely.</b></p>	
<b>A:</b>	<ul style="list-style-type: none"> <li>• Response: Bicycle and pedestrian safety are among the primary concerns of this study. The proposed improvements will include shared use paths along both sides of Route 7. Most signalized intersections will include full pedestrian crossings with crosswalks and pedestrian countdown signals. Locations where a crosswalk across Route 7 is not feasible, pedestrian overpasses are being considered nearby for pedestrian/bicycle connectivity.</li> </ul>



**DRAFT**

Route 7 Corridor Study  
Route 28 to the Fairfax County Line  
Loudoun County, Virginia

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## Appendix 5: Potential Interim Safety Improvements Cost Estimates

Route 7 Potential Interim Safety Improvements Potomac View Road (1.1)					
Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	MOBILIZATION	LS	1	\$ 37,000	\$ 37,000
2	EARTHWORK	LS	1	\$ 62,400	\$ 62,400
3	PAVEMENT ITEMS	LS	1	\$ 199,100	\$ 199,100
4	INCIDENTALS	LS	1	\$ 2,800	\$ 2,800
5	SIGNING AND PAVEMENT MARKING (3%)	LS	1	\$ 13,900	\$ 13,900
6	DRAINAGE (20%)	LS	1	\$ 92,100	\$ 92,100
7	MAINTENANCE OF TRAFFIC (5%)	LS	1	\$ 23,100	\$ 23,100
8	SIGNALIZATION	LS	1	\$ 30,000	\$ 30,000
	<b>SUB-TOTAL</b>				\$ 460,400
	ENGINEERING DESIGN(15%)				\$ 70,000
	CONSTRUCTION ENGINEERING & INSPECTION (15%)				\$ 70,000
	CONTINGENCY (30%)				\$ 140,000
	<b>TOTAL</b>				\$ 740,000

#### NOTES:

Pavement Items include: removal of existing pavement, full depth construction of roadway and resurfacing

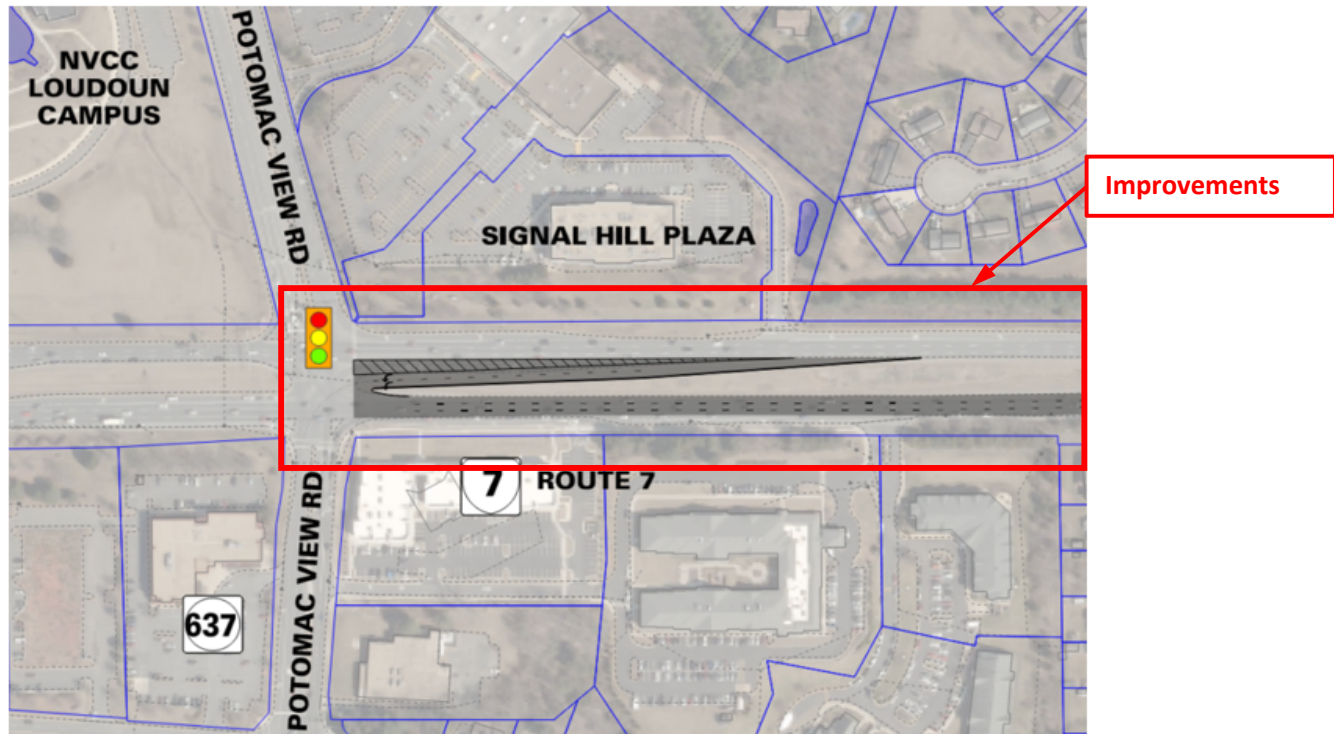
Incidentals include: Curbs, curb and gutter, and median

Signalization includes: Adding/Subtracting existing structures, heads, traffic signs, and cabinet modifications

Interim Improvement Description from Route 7 Corridor Study:

1. Extend westbound left turn storage length and angle away from adjacent thru lanes.

*Safety issue addressed:* Westbound sideswipe crashes; vehicles may be trying to squeeze past queued thru vehicles to access the left-turn lanes.



Route 7 Potential Interim Safety Improvements North Sterling Boulevard (2.3)					
Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	MOBILIZATION	LS	1	\$ 50,000	\$ 50,000
2	EARTHWORK	LS	1	\$ 83,200	\$ 83,200
3	PAVEMENT ITEMS	LS	1	\$ 321,000	\$ 321,000
4	INCIDENTALS	LS	1	\$ 6,000	\$ 6,000
5	SIGNING AND PAVEMENT MARKING (3%)	LS	1	\$ 20,100	\$ 20,100
6	DRAINAGE (20%)	LS	1	\$ 133,400	\$ 133,400
7	MAINTENANCE OF TRAFFIC (5%)	LS	1	\$ 33,400	\$ 33,400
8	SIGNALIZATION	LS	1	\$ 20,000	\$ 20,000
SUB-TOTAL					\$ 667,100
ENGINEERING DESIGN(15%)					\$ 100,000
CONSTRUCTION ENGINEERING & INSPECTION (15%)					\$ 100,000
CONTINGENCY (30%)					\$ 200,000
TOTAL					\$ 1,067,000

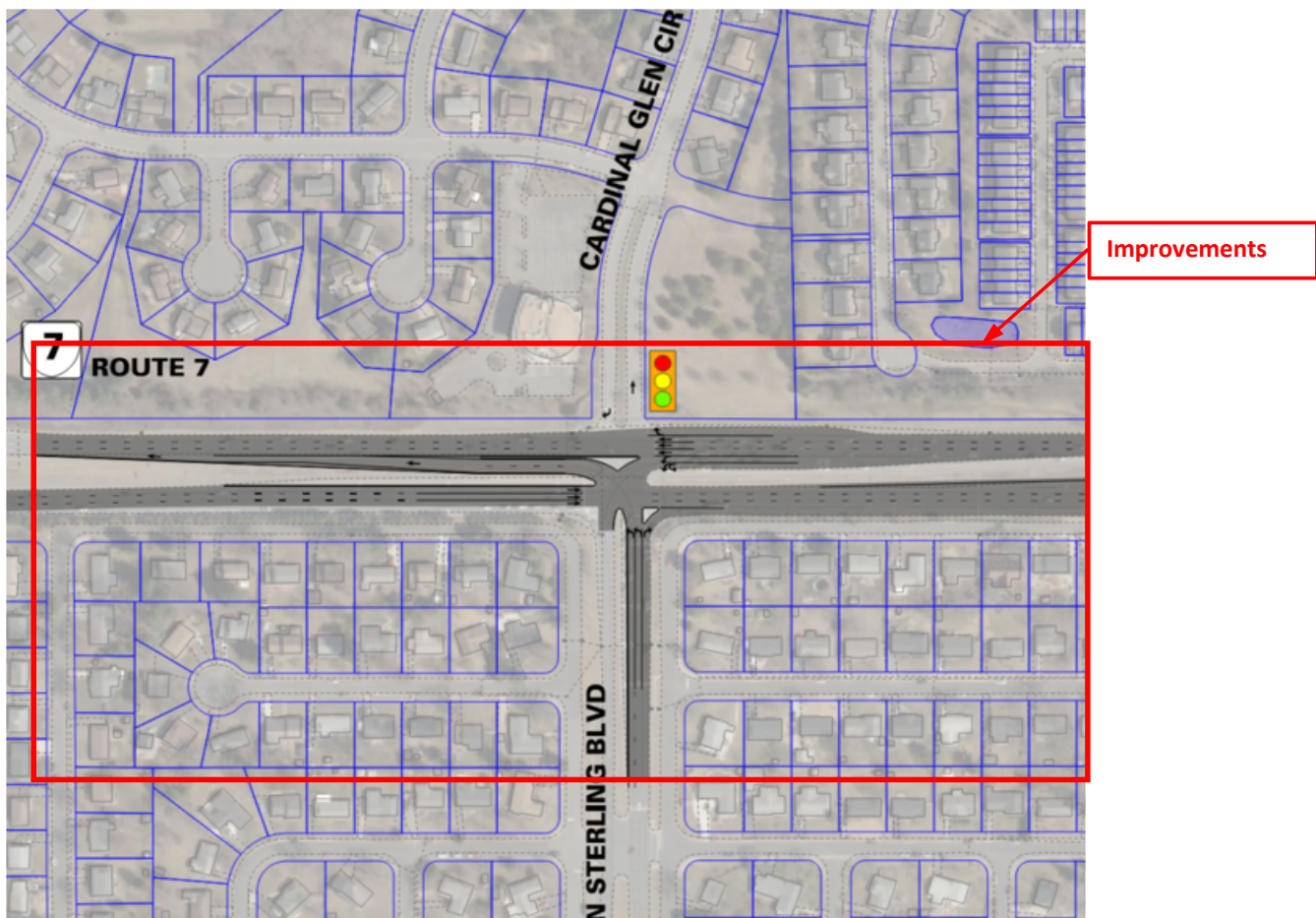
**NOTES:**

Signalization includes: Adding/Subtracting existing structures, heads, traffic signs, and cabinet modifications

Interim Improvement Description from Route 7 Corridor Study:

1. Green-T Intersection for Sterling Boulevard with Right In/Right Out-only for Cardinal Glen Circle.

*Safety issue addressed:* Reduces number of conflict points at the intersection; makes westbound free-flow to reduce westbound rear-end crashes.



Route 7 Potential Interim Safety Improvements North Sterling Boulevard (2.2)					
Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	MOBILIZATION	LS	1	\$ 5,800	\$ 5,800
2	MAINTENANCE OF TRAFFIC	LS	1	\$ 3,000	\$ 3,000
3	SIGNALIZATION	LS	1	\$ 55,000	\$ 55,000
	<b>SUB-TOTAL</b>				\$ 63,800
	ENGINEERING DESIGN(15%)				\$ 9,600
	CONSTRUCTION ENGINEERING & INSPECTION (15%)				\$ 9,600
	CONTINGENCY (30%)				\$ 19,100
	<b>TOTAL</b>				\$ 102,000

**NOTES:**

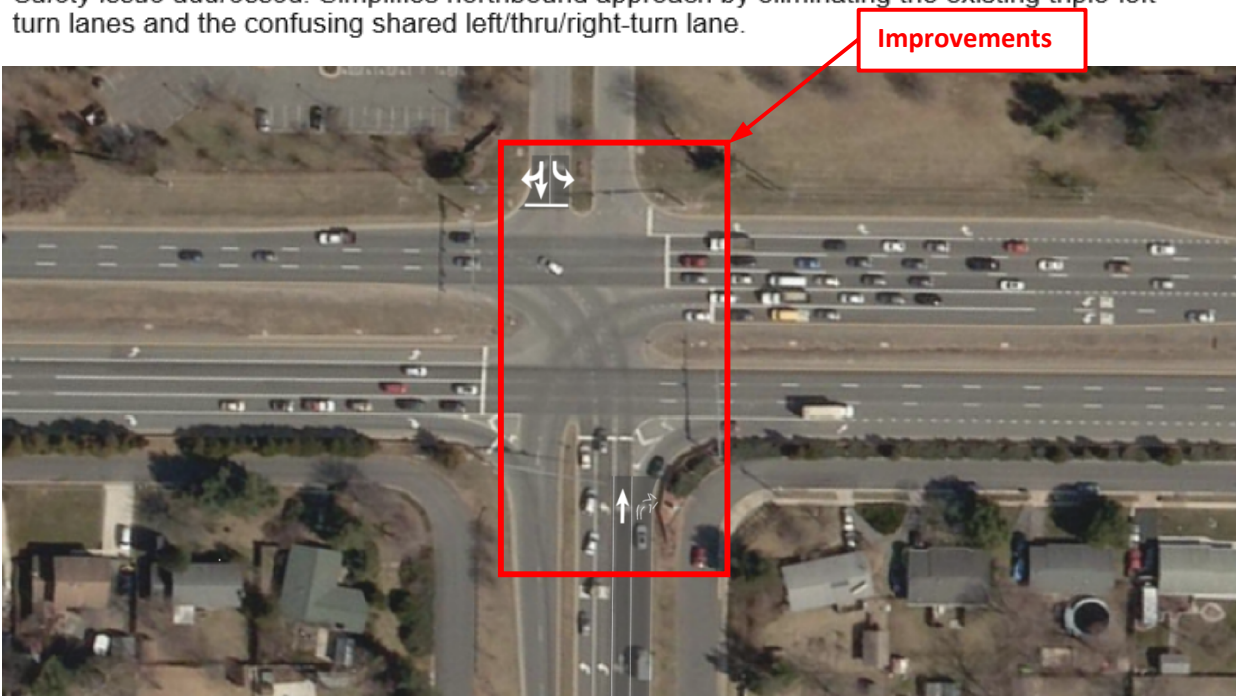
Signalization includes: Adding/Subtracting existing structures, heads, traffic signs, and cabinet modifications

\*assuming adding new signal head increases the weight limit of the existing mast arm pole, a new structure must be added

Interim Improvement Description from Route 7 Corridor Study:

2. Change northbound approach to L, L, T, R and southbound approach to L, shared TR; replace North/South split-phasing with concurrent protected-only northbound and southbound left-turn phasing.

*Safety issue addressed:* Simplifies northbound approach by eliminating the existing triple-left turn lanes and the confusing shared left/thru/right-turn lane.



Route 7 Potential Interim Safety Improvements North Sterling Boulevard (2.1)					
Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	MOBILIZATION	LS	1	\$ 2,000	\$ 2,000
3	PAVEMENT ITEMS	LS	1	\$ 16,000	\$ 16,000
5	SIGNING AND PAVEMENT MARKING	LS	1	\$ 500	\$ 500
7	MAINTENANCE OF TRAFFIC	LS	1	\$ 3,000	\$ 3,000
	<b>SUB-TOTAL</b>				\$ 21,500
	ENGINEERING DESIGN(15%)				\$ 3,200
	CONSTRUCTION ENGINEERING & INSPECTION (15%)				\$ 3,200
	CONTINGENCY (30%)				\$ 10,000
	<b>TOTAL</b>				\$ 38,000

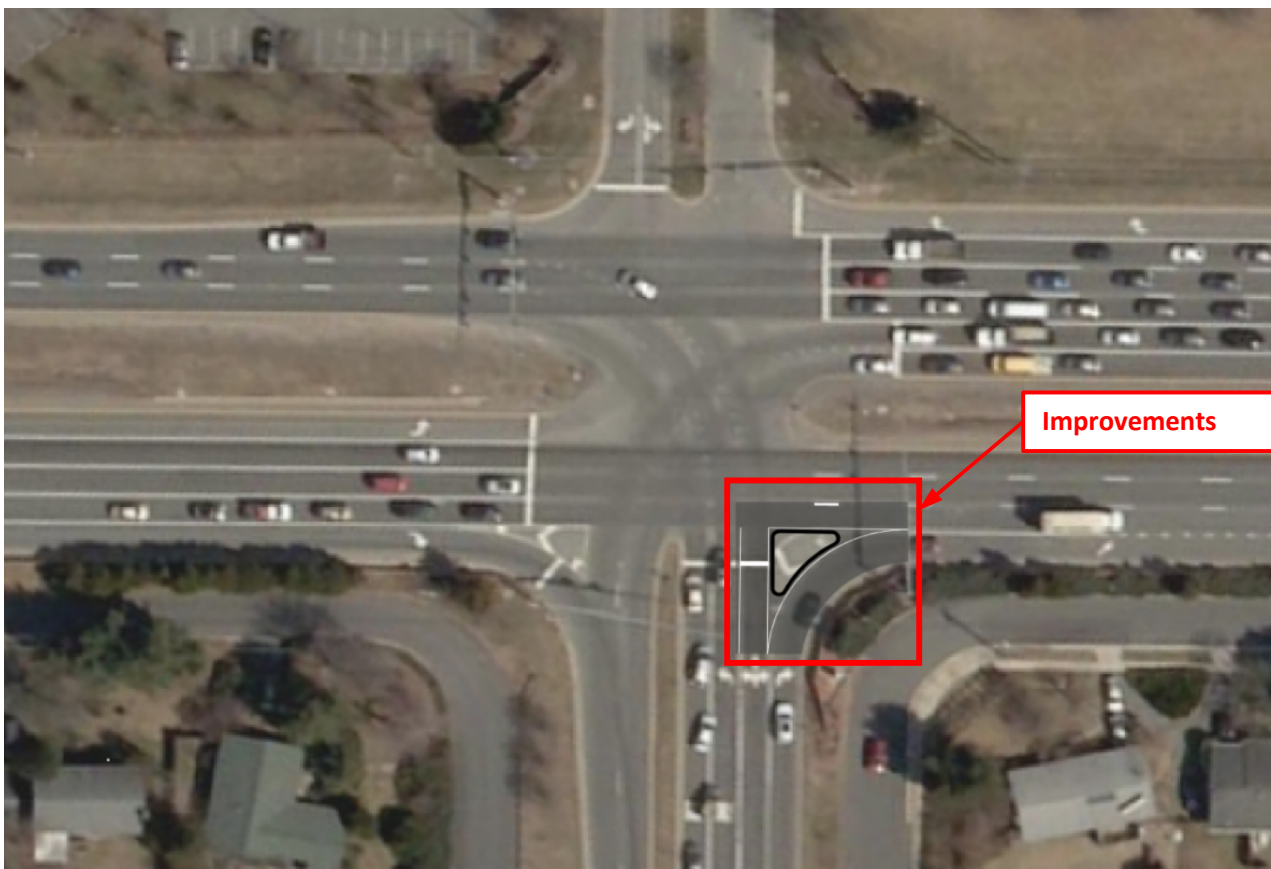
**NOTES:**

Incidentals include: Curbs, curb and gutter, and median

Interim Improvement Description from Route 7 Corridor Study:

3. Replace painted northbound right turn channelizing island with a raised concrete island.

*Safety issue addressed:* Simplifies the northbound right-turn movement which may improve northbound traffic flow and reduce rear-end and sideswipe crashes.



Route 7 Potential Interim Safety Improvements Augusta Drive (3.1)					
Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	MOBILIZATION	LS	1	\$ 52,000	\$ 52,000
2	EARTHWORK	LS	1	\$ 20,800	\$ 20,800
3	PAVEMENT ITEMS	LS	1	\$ 334,600	\$ 334,600
4	INCIDENTALS	LS	1	\$ 3,300	\$ 3,300
5	SIGNING AND PAVEMENT MARKING (3%)	LS	1	\$ 20,500	\$ 20,500
6	DRAINAGE (20%)	LS	1	\$ 136,400	\$ 136,400
7	MAINTENANCE OF TRAFFIC (5%)	LS	1	\$ 34,100	\$ 34,100
8	SIGNALIZATION	LS	1	\$ 80,000	\$ 80,000
	SUB-TOTAL				\$ 681,700
	ENGINEERING DESIGN(15%)				\$ 100,000
	CONSTRUCTION ENGINEERING & INSPECTION (15%)				\$ 100,000
	CONTINGENCY (30%)				\$ 200,000
	TOTAL				\$ 1,082,000

#### NOTES:

Pavement Items include: removal of existing pavement, full depth construction of roadway and resurfacing

Incidentals include: Curbs, curb and gutter, and median

Signalization includes: Adding/Subtracting existing structures, heads, traffic signs, and cabinet modifications

Interim Improvement Description from Route 7 Corridor Study:

1. Green-T Intersection.

*Safety issue addressed:* Reduces number of conflict points at the intersection; makes eastbound free-flow to reduce EB rear-end crashes.



Route 7 Potential Interim Safety Improvements Augusta Drive (3.2)					
Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	MOBILIZATION	LS	1	\$ 100	\$ 100
2	MAINTENANCE OF TRAFFIC	LS	1	\$ 500	\$ 500
3	SIGNING AND PAVEMENT MARKING	EA	1	\$ 500	\$ 500
	<b>SUB-TOTAL</b>				\$ 1,100
	ENGINEERING DESIGN(15%)				\$ 200
	CONSTRUCTION ENGINEERING & INSPECTION (15%)				\$ 200
	CONTINGENCY (30%)				\$ 300
	<b>TOTAL</b>				\$ 2,000

**NOTES:**

Signing and Pavement Marking includes the addition of one sign

Interim Improvement Description from Route 7 Corridor Study:

2. Southbound approach No Turn on Red.

*Safety issue addressed:* May reduce likelihood of angle crashes due to apparent insufficient sight distance looking left from the SB approach.



Route 7 Potential Interim Safety Improvements Augusta Drive (3.3)					
Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	MOBILIZATION	LS	1	\$ 150	\$ 150
2	SIGNING AND PAVEMENT MARKING	LS	1	\$ 500	\$ 500
3	MAINTENANCE OF TRAFFIC	LS	1	\$ 1,000	\$ 1,000
	<b>SUB-TOTAL</b>				\$ 1,650
	ENGINEERING DESIGN(15%)				\$ 200
	CONSTRUCTION ENGINEERING & INSPECTION (15%)				\$ 200
	CONTINGENCY (30%)				\$ 500
	<b>TOTAL</b>				\$ 2,550

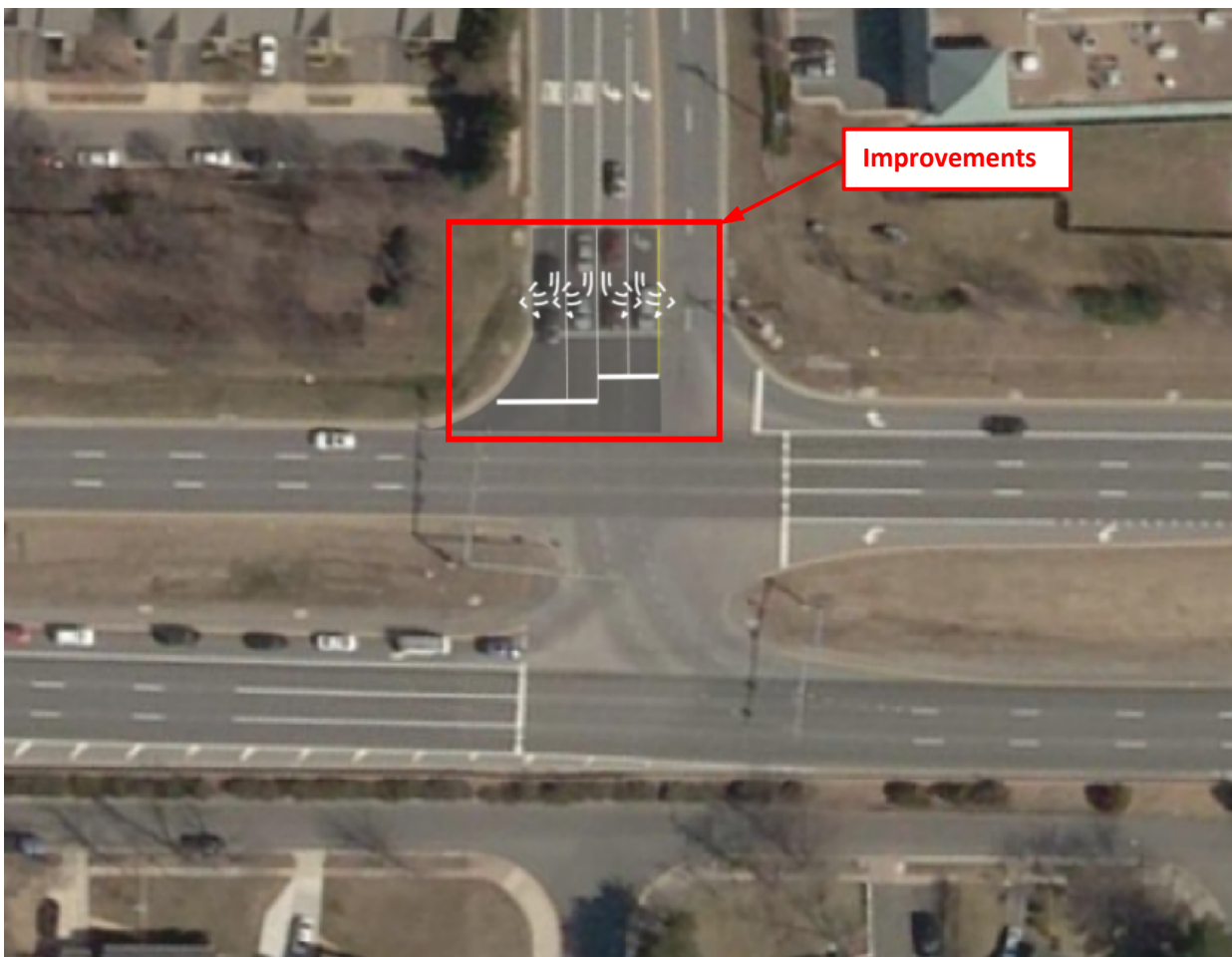
**NOTES:**

Signing and Pavement Markings include the removal/addition of traffic lines

Interim Improvement Description from Route 7 Corridor Study:

3. Move southbound right turn lane stop line closer to the intersection and allow Right Turn on Red.

*Safety issue addressed:* May improve sight distance looking left from the southbound approach for right turns and reduces the likelihood of angle crashes.



Route 7 Potential Interim Safety Improvements Cedar Drive (4.1)					
Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	MOBILIZATION	LS	1	\$ 27,000	\$ 27,000
2	EARTHWORK	LS	1	\$ 20,800	\$ 20,800
3	PAVEMENT ITEMS	LS	1	\$ 187,700	\$ 187,700
4	INCIDENTALS	LS	1	\$ 2,900	\$ 2,900
5	SIGNING AND PAVEMENT MARKING (3%)	LS	1	\$ 10,000	\$ 10,000
6	DRAINAGE (20%)	LS	1	\$ 66,300	\$ 66,300
7	MAINTENANCE OF TRAFFIC (5%)	LS	1	\$ 16,600	\$ 16,600
	<b>SUB-TOTAL</b>				\$ 331,300
	ENGINEERING DESIGN(15%)				\$ 50,000
	CONSTRUCTION ENGINEERING & INSPECTION (15%)				\$ 50,000
	CONTINGENCY (30%)				\$ 100,000
	<b>TOTAL</b>				\$ 531,000

**NOTES:**

Pavement Items include: removal of existing pavement, full depth construction of roadway and resurfacing

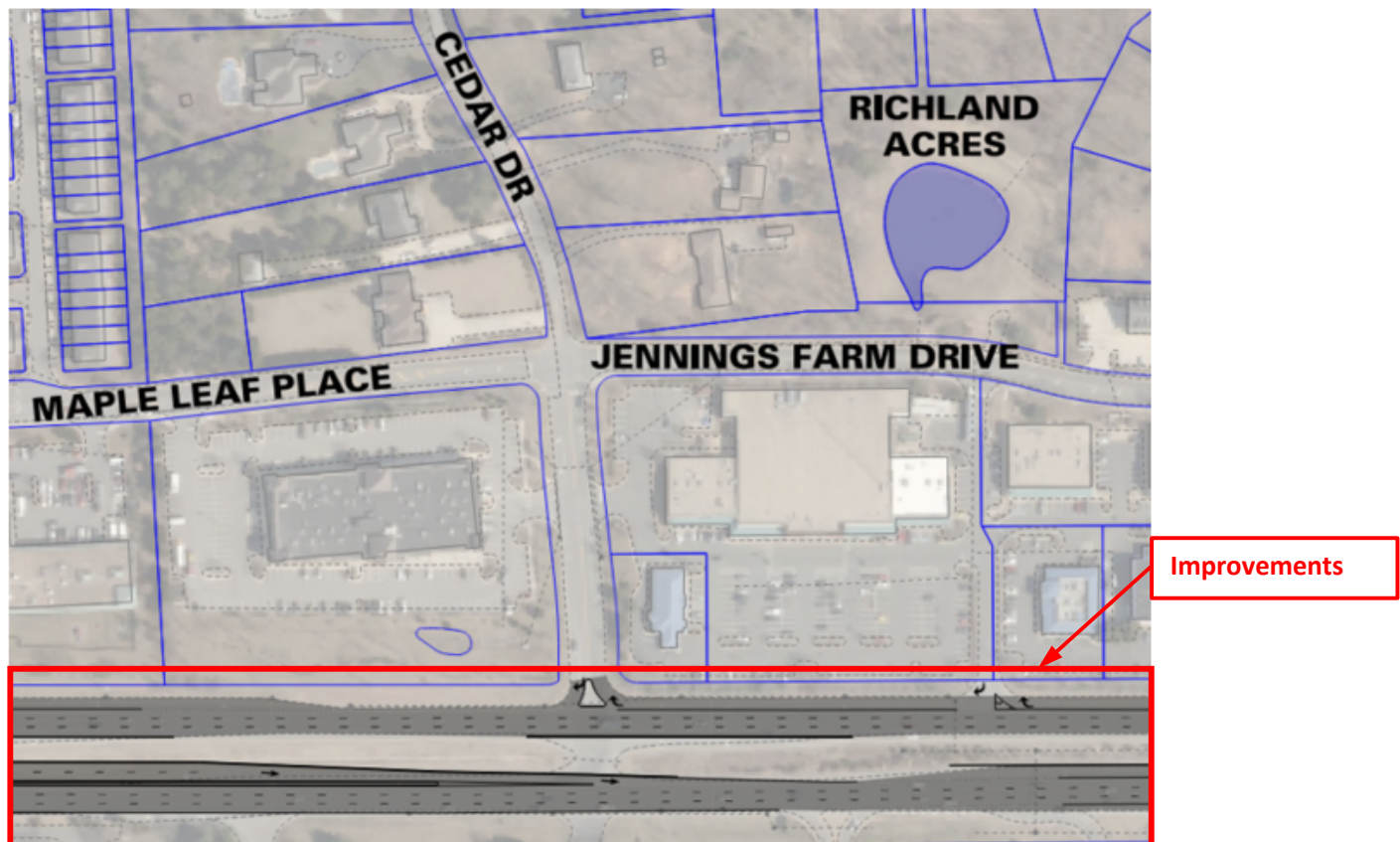
Incidentals include: Curbs, curb and gutter, and median

Signalization includes: Adding/Subtracting existing structures, heads, traffic signs, and cabinet modifications

Interim Improvement Description from Route 7 Corridor Study:

1. Close the median crossover and make southbound approach Right In/Right Out-only (analysis should divert traffic to U-turns eastbound at Lakeland Drive and westbound at Augusta Drive).

*Safety issue addressed:* Reduces number of conflict points at this unsignalized intersection.



Route 7 Potential Interim Safety Improvements Lakeland Drive and Community Plaza (5.1)					
Item No.	Description	Unit	Quantity	Unit Cost	Total Cost
1	MOBILIZATION	LS	1	\$ 58,000	\$ 58,000
2	EARTHWORK	LS	1	\$ 115,000	\$ 115,000
3	PAVEMENT ITEMS	LS	1	\$ 299,000	\$ 299,000
4	INCIDENTALS	LS	1	\$ 6,300	\$ 6,300
5	SIGNING AND PAVEMENT MARKING (3%)	LS	1	\$ 21,300	\$ 21,300
6	DRAINAGE (20%)	LS	1	\$ 141,800	\$ 141,800
7	MAINTENANCE OF TRAFFIC (5%)	LS	1	\$ 35,500	\$ 35,500
8	SIGNALIZATION	LS	1	\$ 90,000	\$ 90,000
SUB-TOTAL					\$ 766,900
ENGINEERING DESIGN(15%)					\$ 120,000
CONSTRUCTION ENGINEERING & INSPECTION (15%)					\$ 120,000
CONTINGENCY (30%)					\$ 230,000
TOTAL					\$ 1,237,000

**NOTES:**

Pavement Items include: removal of existing pavement, full depth construction of roadway and resurfacing

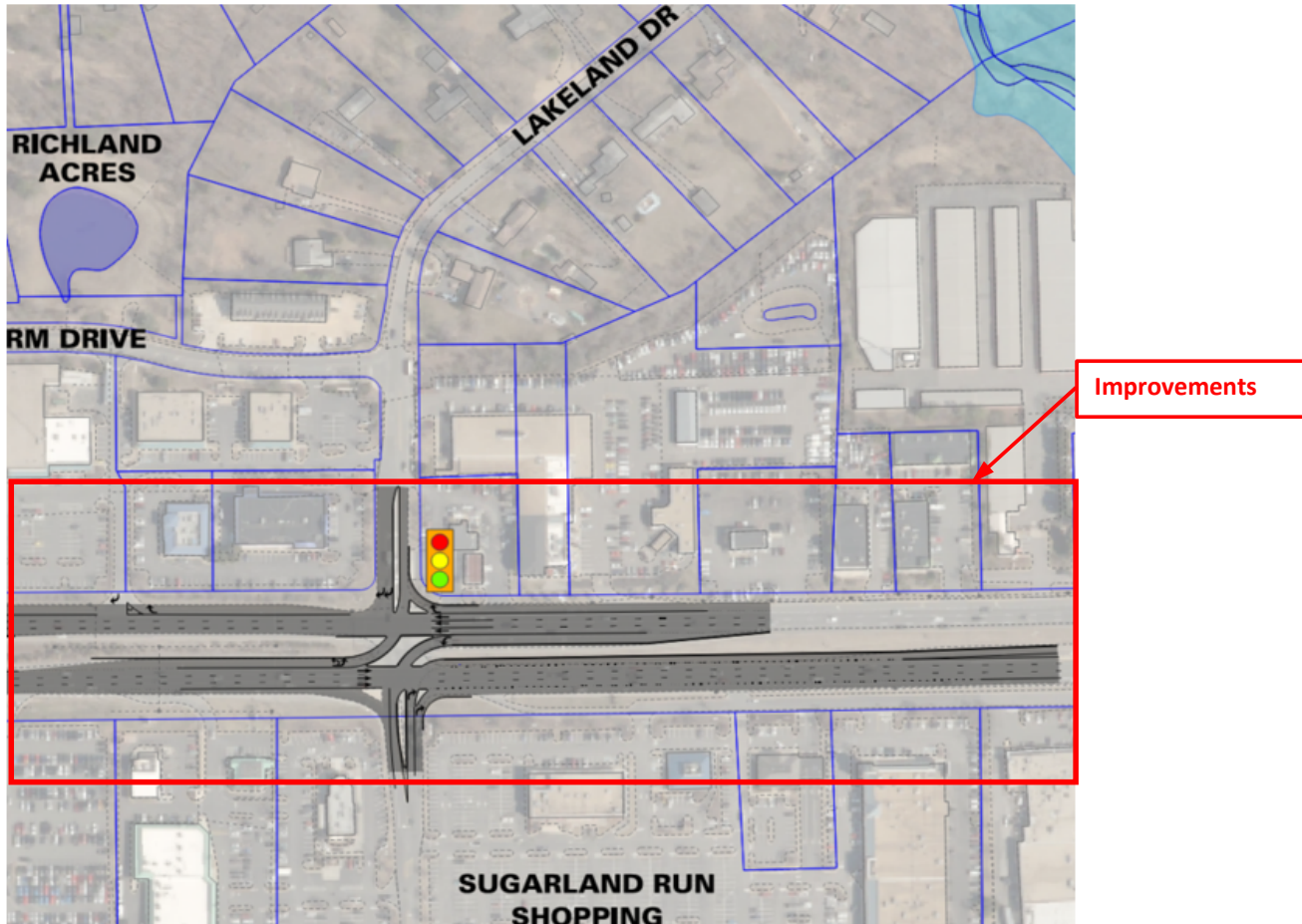
Incidentals include: Curbs, curb and gutter, and median

Signalization includes: Adding/Subtracting existing structures, heads, traffic signs, and cabinet modifications

Interim Improvement Description from Route 7 Corridor Study:

1. Convert to Restricted Center U-Turn intersection (Northbound and southbound approaches are right-turn only, with U-turns downstream eastbound at Dranesville Road and westbound at Augusta Drive; close Cedar Drive median crossover for this option).

*Safety issue addressed:* Reduces number of conflict points.





12600 FAIR LAKES CIRCLE,  
SUITE 300  
FAIRFAX, VA 22033